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EDITORIAL.

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PARIS, October 15, 1912.

A SUCCESSFUL SURGICAL OPERATION.—In the Bulletins of the Royal Academy of Sciences of Bologna, Prof. A. Baldoin has published the resumé of his successful interference in a case of purulent traumatic arthritis of the temporo-maxillary joint in a horse by the resection of the condyle of the maxillary bone, which I extract from *Leclainche's Review.*

The total resection of the condyle is an operation almost unknown in veterinary surgery—the only case on record is that of Vachetta, who operated in 1883, also for purulent arthritis of the joint. Partial resection of the condyle and complete of the articulation have however been already performed by Frohner, Eberlein and Baldoin. In the present case the entire resection was performed in a four-year-old mare which had purulent arthritis of the temporo-maxillary joint as sequelæ of a punctured wound.

A month after the accident, there was on the left temporo-maxillary joint a round swelling, as big as half an orange, warm, painful, with fibrous consistency and having a solution of continuity in its center, partly closed with granulations. A probe introduced gave the sensation of rough articular surfaces. The masseter muscles, principally the left, are atrophied and the jaws firmly closed, are opened with difficulty. The mastication is very limited, the animal feeds very poorly and is much emaciated.

Rather than try any kind of treatment Baldoin decides to operate at once.

The animal is thrown, and anesthesia being considered not necessary, the region is prepared. "Two perpendicular incisions are made, 6 centimeters long, crossing on the center of the tumefaction. The cutaneous flaps are dissected and kept apart with sharp tenaculum. A second crucial incision is made in the sub-cutaneous tissues, namely, the infiltrated thickened connective tissue, a fibrous layer, the portion of the parotid covering the anterior part of the articulation, the masseter and the capsular ligament reinforced by the external funicular band."

Great care was taken to avoid injuring the parotid, which was raised and held back. The transversal artery and vein of the face which pass below the joint were also carefully drawn downward. "The joint being thus exposed, the soft tissues round the neck of the condyle were isolated with probe and blunt bistouris and the condyle then cut off with shears of Liston, care being taken not to injure the internal maxillary artery nor the nervous trunks of the fifth and seventh pairs. After the section of the neck, the capsular ligament was divided as well as the posterior funicular ligament, and the articular meniscus, already partly necrosed, was cut off and removed." The walls of the articulation and the articular surfaces were curetted, the wound was cleared off and dressed with a plug of gauze and iodoformed glycerine. There was very little hemorrhage. Immediately after the operation, the animal could open his mouth quite well and after five days mastication was normal. The recovery was perfect, except that the left temporo-maxillary joint is less prominent than the right.

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The recovery has necessarily required the formation of a pseudo-arthrosis. To judge of its characters Baldoin performed the similar operation on a subject for experiment. The resection was performed without difficulty and recovery perfect after

forty days. Three months after the horse was killed. On examining the seat of the operation, a mass of connective tissue was found uniting the zygomatic arch to the stump of the neck of the maxillary, adherent to the posterior border of the coronoid process and in continuity with the surrounding tissues. The objections to the operation are rather numerous, but can be easily avoided.

The lesions to the facial nerve are almost impossible in solipeds on account of its low location. It is also impossible to injure the anterior auricular artery and vein or the temporo-zygomatic nerve, which are on the outside of the operating field.

But it may be possible and easy to wound the parotid, the transversal blood-vessels of the face and the superficial temporal nerve. Accidents can be avoided by the dissection of the anterior border of the parotid which is then drawn backward and that of the blood-vessels and nerve which are pushed downward.

The most serious complication is the wound of the internal maxillary artery which runs inside the body of the condyle. Branches of the fifth and seventh pair of nerves may also be injured or again perhaps the guttural pouch in the superior portion. These accidents that are difficult to avoid when the resection is made with chisel and hammer are yet possible with the osteotomic shears. The surest way would probably be to resort to the chain saw, introduced between the neck of the condyle and the internal maxillary artery. For Baldoin the total resection of the condyle is the best operation in all cases of purulent temporo-maxillary arthritis. It is more simple and less dangerous than the complete resection of the joint and besides is followed by a more rapid recovery and a less marked deformation of the region. At any rate it was a grand operation which deserved recording.

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LACTIC FERMENTS IN COMPARATIVE PATHOLOGY.—For some time, in human medicine, the origin and pathogenic action of intestinal fermentations have been well known, and from this

knowledge, so clearly demonstrated by Professor Metchnikoff, a new therapy of intestinal diseases has been started, established on the principle advanced by the professor; viz., substitute to the wild flora of the intestines one of culture of other species, benignant or at least harmless.

In veterinary medicine and present knowledge of intestinal flora are quite complete, as far as the dog is concerned. And although we know less of that of horses, Metchnikoff has recently demonstrated that the intestines of the last animal contain in great quantity poisons of the aromatic series (iodols and phenols) which indicate the rich condition of the toxic flora.

And from these demonstrated facts it seems possible, comparing from man to animals, to admit that the pathogenous action of this flora in animals is quite closely related to the symptoms observed in a very large number of digestive troubles, in which the functions of the apparatus are vitiated by putrefaction, by fermentation, *acute enteritis, intestinal localizations* in infectious diseases, such as in influenza of horses and distemper of dogs or again in chronic cases where the infectious condition plays a prominent part.

Certainly it was interesting to know if, in animals, the neutralization of the toxic elements of the intestinal canal could be obtained with the administration of lactic ferments and the precious results realized in man be, with horses and dogs, similar and as important as they are in man.

There is but one chemical agent which can, without danger, realize intestinal antisepsy and control its fermenting condition; it is lactic acid. And as it has been demonstrated that fermentation can take place only in an alkaline media and that it can be arrested or controlled by lactic ferments which render the media neutral, the indications were evident that lactic ferments must be resorted to so as to realize the permanent acidity of the intestinal media and reduce the fermentation to its minima.

Among the many preparations containing the bacilli-producing lactic acid, the lactobacilline is in very high estimate in human medicine as an agent for intestinal therapy, being made with pure

cultures of bacillus Bulgaris, which by many observers is recognized as an excellent producing agent of lactic acid, and which besides has the property of acclimatizing itself readily in the intestines when in the presence of sugars. With all these points in consideration, experiments were made and recorded in the *Recueil de Medecine Vétérinarie* by Mr. Darrow, veterinarian of the Republican Guard in Paris. In horses 14 cases were treated, 2 for acute muco-membranous enteritis, 7 for chronic affections of the same nature, 2 for repeated colics of indigestion, 3 for intestinal suralimentation, 2 for intestinal localization during an attack of influenza. In dogs, 2 cases of intestinal localization in distemper, 2 for intestinal intoxication with unknown cause, 1 for gastro-enteritis.

The results were in all most satisfactory, principally in chronic cases. Improvement is already observed two or three days after the treatment was begun. The lactobacilline can be given in powder (20 to 30 grammes to horses, 5 to 10 to dogs), mixed in food or electuary. It can also be used in cultures, 2 litres a day for horses, 150 to 200 grammes to dogs. Sugar, molasses, syrup must be administered at the same time.

This new form of treatment for diseases of the digestive canal, which are sometimes so severe, so rebellious and even fatal, deserves at the hands of practitioners a fair trial.

* * *

VACCINIA.—Professor Cadéac has written in the *Journal de Zootechnic* a long review on this subject embracing its etiology and pathogeny and in which many points of interest are at length considered, such as: the theory upon the pathogenous agent, the virulent matters of the subjects affected with it, the resistance of the virus, the variation of its virulency, the vaccinal immunity it posesses, the serotherapy of vaccine, its relations with variola, the artificial infection, the pathogeny, the secondary infection, and the vaccination.

This long enumeration of the various parts treated by the

professor tells how complete his review is, and prevents an entire reproduction. I will, however, offer our readers one of them as being probably of a specific interest and because it contains information with which they may not be very familiar.

* * *

ARTIFICIAL INFECTIONS.—Horses are the animals that have the maximum of receptivity for vaccinia. The inoculated vesico-pustules of the horse may appear quite often outside the points of inoculation; they contain abundant and very active lymph.

Subcutaneous injections of the vaccine is sometimes followed with large pustular exanthemas which by their seat and characteristic together do not in the least differ from the eruption of natural horse-pox.

The generalization of the consecutive infection of a local inoculation is specially characteristic to the *horse,* showing as it does the extreme receptivity of this animal species. The horse appears to us as the primitive source of vaccinia; he is easily infected by all ways. *Ingestion* of vaccinal pulp and the *inhalation* of dried or pulverized vaccine is followed sometimes by generalized eruption.

The introduction of vaccine in veins promotes quite frequently in *horses* the eruption of vaccinal exanthemas, exact fac-similes of those of the natural disease. Sometimes, however, the eruption is vesicular or vesico-populous, like that which succeeds to the inoculation of variolic virus in veins. The absorption of the virus through lymphatics is followed, after eight or ten days, with an eruption identical to that which results from natural infection. The deposit of virus on a wound, a cutaneous excoriation or that of a mucous, is like a local inoculation, the preface of the apparition of one or several pustules.

Infection in the *testicle* gives to the pulp of that organ a vaccinal activity noticed from the third to the seventh day.

Donkeys offer to vaccine a receptivity nearly equal to that of horses. The *ass-pox* has often been observed.

Bovines are a little less susceptible than *equines,* in this way, that eruption does not generalize.

The pustules of the *cow-pox* follow the cutaneous inoculation of the natural or artificial cow-pox, of the horse-pox or of the human vaccine (retro-vaccination). As many vesico-pustules as there have been inoculations made will appear and all are umbilicated. The subcutaneous injection of vaccine gives rise to an oedematous infiltration without any eruption. The injection of vaccinal lymph in the galactophorous canals is followed after two or three days by a moderated fever, swelling and painful teats; the milk becomes purulent and bloody toward the ninth day; it is virulent the fourteenth; the local pain is due to the development of vesicles on the walls of the galactophorus canals. Young animals are considered as having a greater receptivity than adults, but it has not been proved why. The venous injection of vaccine does not give rise in the calf to general accidents. Indigenous heifers of Soudan are not very sensitive; but *buffaloes* in Saigon are.

Sheep contract the *sheep-pox* vaccinia by inoculation, but they are not very good media; appearance of the pustules is slow and they remain small, assume a populous form and often dry before the secretion takes place.

Goats take the *goat-pox* by inoculation; they are excellent vacciniferous; the pustules have all the characters of the classic vaccine.

Lama contract vaccine; the eruption is slow. The transmission from *lama to lama* reduces the virulency of the infectious agent.

Camels are excellent vacciniferous animals.

Swine are an uncertain media of culture.

Dogs take vaccinia easily, whether human or animal. Subcutaneous or intravenous injections give immunity without eruption appearing.

Rabbits are also susceptible to vaccinia. They have typical pustules with hyperlukocytosis between the third and fifth day. The best way to inoculate is to apply fresh or glycerined vaccinal pulp on the skin just when it has been shaved, and is yet irritated by the shaving.

The vaccine, not very virulent, is inactive when inoculated in

the skin, but it cultivates on the cornea. Receptivity in rabbits varies.

Guinea-pigs are very susceptible; its immunity is temporary.

Chickens take vaccinia by inoculation of the skin of the thorax or that of the gills. The lesions consist in papulo-pustules transmissible in serum from one chicken to another.

Monkeys are also susceptible and can be used as animals for experiment.

Man has less receptivity than horses and bovines; epidemics of vaccinia are unknown in human species and accidental inoculations are also rare.

* * *

IMPORTANT QUESTION IN BREEDING.—At one of the last meetings of the National Agricultural Society Mr. G. Barrier, the Inspector of the Veterinary Schools of France, presented a valuable paper upon the importance of the general improvements in breeding by the qualities that a mare ought to possess before being selected as a brood mare. The several articles which have appeared in the REVIEW and as an addition to the suggestions made by some of our correspondents, Dr. Schwartzkopf, among the first, justify me in sending the resumé of Mr. Barrier's communication.

"1. In the sexual act, the mare gives out a germ which unites its hereditary energies to those of the stallion's germs. She offers, besides, to the fecundated egg a shelter where it will gather all the materials for its first development, almost always the director of the ultimate growth.

"2. The ovule or female germ, possesses in power all the morphology, the energy and the heredity of the mother; the spermatozoid, or the male germ, those of the father. The uniformity between the two germs sums up their properties, which unite in the product; their unevenness promotes their concurrence and has on the contrary a tendency to separate them.

"3. With equal hereditary power, the mother thus, in the

creation of the product and in consequence for the improvement of the breed, is as good as the father.

"4. The hereditary power is closely related to the ancientness of the breed or of the family and at the same time to the racing aptitudes of each of the generators.

"5. It is then as indispensable to take in careful consideration the origin and the racing aptitudes of the brood mare as those of the stallion, if one wishes to reckon on the value of her ancestral and her individual heredity.

"6. If the two generators are well conformed and belong to the same breed, the product will benefit of the morphology and of the energy of both, but nearer to the one which will have an individual preponderating heredity. In such case the maternal influence then always comes to attenuate or increase that of the father; hence the necessity to select the mother as strictly as possible, in the sense of the characteristics best adapted to the breed. And besides she must be ample, compactly built, robust and healthy, as long as it models and feeds the product.

"7. If the generators, always well confirmed, are of different breeds, the product will not participate of their morphology and their energy, only if there is between them affinity of forms, of moticity and of the analogous exigencies of climate, soil, raising and care; in the contrary case, the separation of the characters of the two breeds will appear in the product and the process of the raising will increase.

"Unlikeness of the generators is one of the most dangerous risks of a crossed product.

"8. If (which is frequent) the brood mare does not belong to a breed well confirmed, the uncertainty of the hereditary transmission is then carried to the extreme, the value of the product is altogether problematic.

"The operation will soon become disastrous, as by forcing to the highest degree the separation of the characters, it increases the failures of the production and hence the miscalculations and losses.

"9. The impregnation of the mother by a first gestation, the

tetagony, does not rest on observations or indisputable experiments, but only on facts of *superfetation* or of *atavism.*

"In the present state of science it can not be considered as proved. On the contrary, everything seems to show that the first copulation has no more influence than the others and that it only affects the present and not the future of the mare.

"10. Theoretically, the breeding of horses would lose less if the idea that the stallion is all and the mare only a simple recipient for the semen to fructify, was not so firmly taken in consideration."

The importance of the above remarks will not escape veterinarians who practice in breeding districts where their good advice on the subject can but help to raise the importance and standing of their profession.

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BIBLIOGRAPHY.—I have received from Publishers Carpenter & Company, of Ithaca, N. Y., a new book from Dr. V. A. Moore, the learned director of the New York State Veterinary College. The work's title is Principles of Microbiology and is a treatise on bacteria, fungi and protozoa pathogenic for domestic animals. The author who holds the important chair of comparative pathology, bacteriology and meat inspection has dedicated his work to all the students who have been studying in his laboratory, and have stimulated him in bringing it out for the needs of beginners in the study of microbiology.

It is often said for new books coming out that they are just making their appearance at the proper time and that they will fill a wanted need. Certainly the same remark will apply to Principles of Microbiology and if veterinary students of Professor Moore will benefit, there can be no doubt that any one who will follow this special study will learn much in reading it. It is not a large book, it is not one that goes into the entire subject of microbiology, but yet see how plain its value is presented in the preface. "Its purpose is to point out the place and role

of micro-organism in nature, to give the methods for their study and identification, to indicate the relation of certain species to animal diseases, to give a description of the more important species pathogenic for animals and a brief discussion of the reaction of the tissues to microbian invasion and the theories of immunity."

And yet the author says the work is not exhaustive, he might have added that it contains *ALL* the essential and important elements which without them the student would find himself much embarrassed.

The volume is made of nearly 500 pages, it has 101 illustrations, well gotten up, easy reading and its contents are divided into 25 chapters where, after a historical sketch and numerous generalities, including the place in nature of bacteria, their morphology, classification and identification of species, the bacteriological apparatus, preparation for cultivation, examination of cultures, stains and so forth, the reader is brought to the consideration of Chapter XV and XVI, which treat of the coccaccœ and their genders, stryptococcus and micrococcus. In the four following chapters we read of the bacteriacœ with the bacillus, the bacterium, the germs pseudomonas migula and the higher bacteria and fungi pathogenic for animals. Protozoa and their pathogenic species, the diseases due to filterable viruses, the consideration of bacterial products, tissue reactions and immunity bring the reader to the end by a glance to serum diagnosis and one to immunity and vaccine therapy.

By this concise enumeration of the contents of Principles of Microbiology one can readily judge that Professor Moore has done a good work and that all those, students or practitioners, who will study them will open for them the doors to a most fascinating and important branch of medicine.

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BIBLIOGRAPHIC ACKNOWLEDGMENTS.—*The "Braxy" Type of Sheep Disease in Australia,* by Professor Gilruth, D.V.S., M.R.C.V.S., of Melbourne University. A reprint from the

"Australasian Association for the Advancement of Science," where the author gives a detailed account of his investigations, experiments, etc., etc., relating to the presence, causes, symptoms and pathogeny of "a group of diseases of sheep which exists in various parts of the world, which though not absolutely identical are so closely allied that they may be dealt with under one general term 'Braxy,' the old-established British name."

From the Bureau of Agriculture of the Government of the Philippine Islands, under the direction of Archibald R. Ward, B.S.A., D.V.M., Chief Veterinarian, I have received Bulletin No. 20, *Experiments on the Efficiency of Antirinderpest Serum,* by the Chief and the Acting Assistant, Frederick William Wood, D.V.M., with the general conclusions: "The foregoing experiments seem to show that antirinderpest serum does not prevent infection with rinderpest. On the contrary, animals injected with serum and exposed to rinderpest soon contract the disease and pass through a more or less modified attack. We have shown that the blood of animals is infective during the attack. If by passive immunity is meant an artificial condition by means of which the severity of an attack is lessened, we grant that such exists, but deny that there is a passive immunity of a kind that prevents invasion by the virus of rinderpest."

Bulletin No. 20, *Notes on the Muscular Changes Brought About By Intermuscular Injection of Calves with the Virus of Contagious Pleuro-Pneumonia,* by Dr. William Hutchings Baynton, D.V.M., pathologist, under the direction of the Chief Veterinarian, with four illustrations.

Bulletin No. 21, *Study of the Normal Blood of Carabao,* by the same authors, researches made at the veterinary laboratory.

Alpha Psi Directory, complied by H. Preston Hoskins, V.M. D., of St. Paul, Minn. This is the first edition which had its issue retarded because of the difficulties to obtain all the information needed, and it is only by hard work that the present National Secretary of the Council, Dr. Hoskins, has succeeded in getting the work in proper shape for publication.

The officers of the Council of the *Alpha Psi Fraternity* thank

all those who have assisted in compiling the necessary material for this edition, but certainly they deserve themselves great compliments for having brought before the members of the Society the interesting contents before us. Already a number of Chapters are in working order, and many familiar names we can find in the Alpha, Beta, Gamma, Delta, Epsilon.

Founded by the veterinary students of Ohio State University in 1906 in order to promote a stronger bond between the veterinary colleges of North America, it counts already 747 members, 120 honorary, 370 graduates, 237 active, represented in Chapters named by the eight first letters of the Greek alphabet.

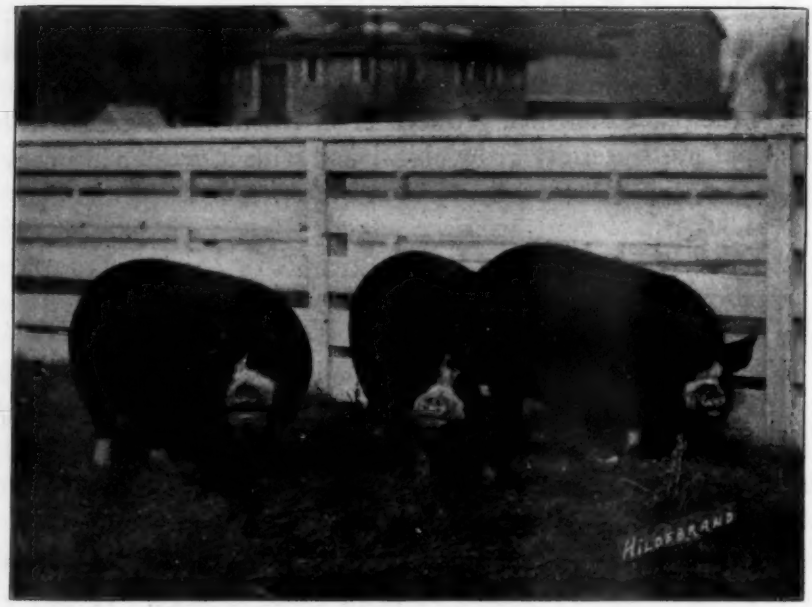
As the profession will grow older in North America, so will the Alphi Psi fraternity grow bigger and with it greater intimacy among veterinarians and their Alma Mater.

A. L.

SILVER ANNIVERSARY OF IOWA VETERINARY ASSOCIATION AND REUNION AT AMES.

November 12, 1912, marked the opening of the first session of the twenty-fifth annual meeting of the Iowa Veterinary Association, which was in the form of a jubilee, in celebration of the silver anniversary of the association, which was organized in Ames in 1887, and of the opening of the splendid new buildings of the old veterinary school of Iowa State College. It was a great triumph for this pioneer veterinary school of the West (the foundation of which was laid by Professor Stalker in 1878) to be in a position to take care of the silver anniversary meeting of the powerful veterinary organization of which Iowa boasts; and it was an equally great triumph for the veterinarians of Iowa to find such a splendidly equipped veterinary school in the state of which they are justly proud, the "Hawkeye State," their own fertile Iowa. And, to add to the jubilee spirit, it was also "home week," and as the week advanced alumni from the various schools of the institution other than the veterinary school began arriving on the campus, in anticipation of the football game that was to

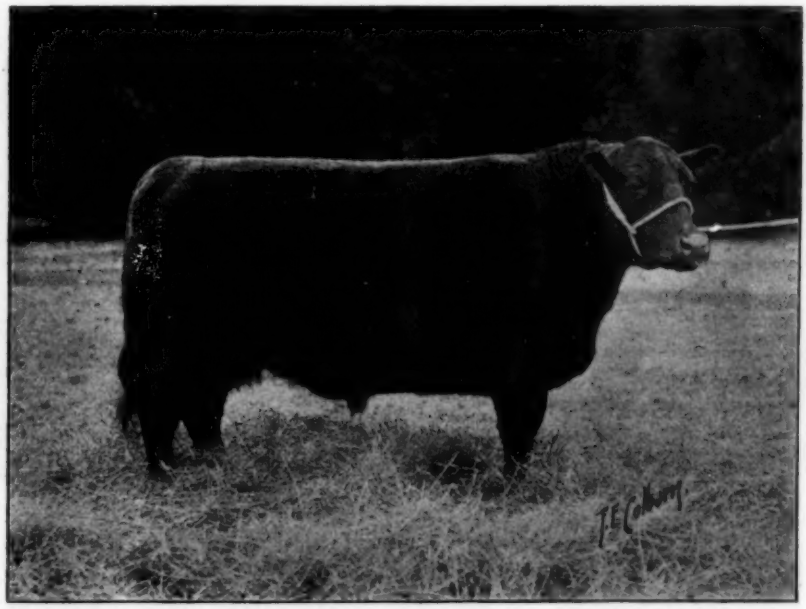
be played on the closing day of the week between the " Cyclones " of the Iowa State College and the " Hawkeyes " of the Iowa State University on the campus of the former institution. It was under these auspicious conditions that the Iowa Veterinary Association opened the first session of its silver anniversary meeting, and was welcomed to the city by the citizens of Ames through Mr. J. Y. Luke, of the Commercial Club, who gave the



International Champion Pen of Barrows, Ames, 1911.

members of the association and their guests a very cordial welcome indeed and some encouraging advice. President Raymond A. Pearson being unavoidably absent, attending a conference of agricultural college presidents, at Atlanta, Ga., Dean Edgar Williams Stanton of the Division of Science, who has given nearly half a century of his lifetime to the Iowa State College and whose enthusiasm is only equaled by his love for the college (the Veterinary school occupies a large and a warm corner in his heart) welcomed the association to the college and told its mem-

bers he wanted them to feel that it was their own, to come into whenever they desired and to use it for their own benefits in any way that they could. To those whose great privilege it has been to meet that whole-souled gentleman, Dean Stanton, the heartiness of the welcome and the warmth it brought into the hearts of those to whom it was given will be readily appreciated, as it seemed to be by Dr. S. H. Johnston, Mayor of *his* home town,

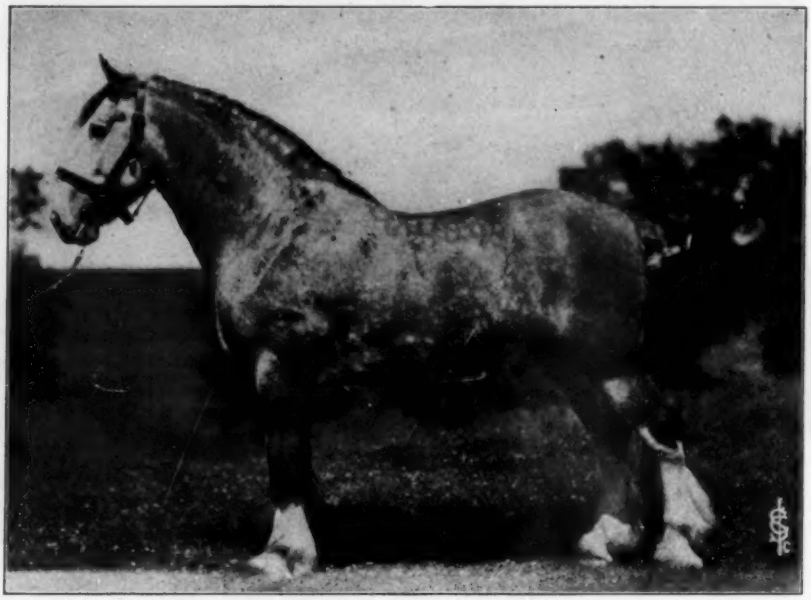


Victor—International Grand Champion, Ames, 1911.

who responded for the association in a humorous manner. The rest of the day was given up to the reports of some very important committees, and the reading and discussion of a paper on "Serum Therapy by the Simultaneous Method for Hog Cholera,"* by Dr. E. A. Buxton, of Vinton, Iowa. The discussion of this very interesting paper on a subject, the importance of which may be imagined when we remember that the author of the paper stated that the loss to farmers in the state of Iowa

*Published on page 331 of this issue.

from this plague during the past year was about fifteen million dollars, was opened by no less an authority than Dr. W. B. Niles, of Ames, who, with Dr. Dorsett, produced the Dorset-Niles hog cholera serum known to the profession on both sides of the Atlantic. The discussion soon became general, in which the members manifested unusual interest and seemed about equally divided in their opinions as the better results from the simultaneous method and that in which the serum alone was used. State Veterinarian

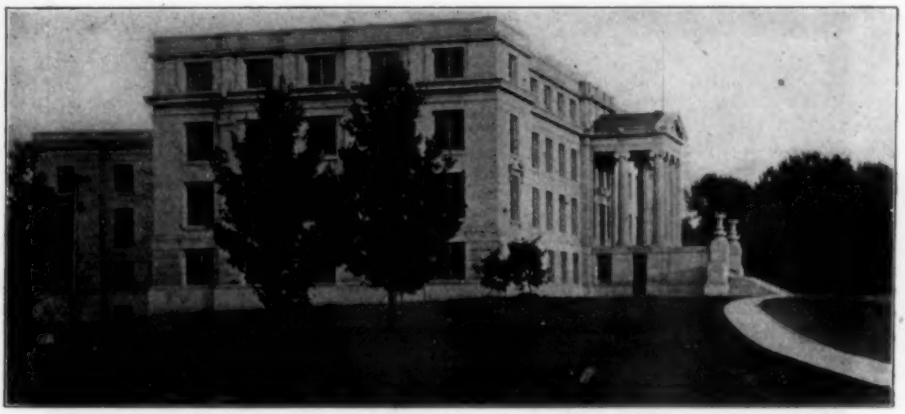


International Winner Used in Government Horse Breeding Work at Ames.

Gibson favored the "serum only" method, and expressed it as his opinion that where it failed it was due to the presence of pleuro-pneumonia in addition to hog cholera, in which case he believed that no treatment would avail. He advised the veterinarians to be careful and methodical in work of that kind, to use enough serum and not try to do so many in a day that they could not attend to the necessary antiseptic precautions.

The evening session, which was opened with music by the

Iowa State College glee club, proved a most interesting and profitable one from a literary viewpoint. Dean Stange of the veterinary school gave an address upon encephalomyelitis in horses, in which he reviewed the literature upon the disease, both European and American, also presenting the symptoms according to his own observations, all of which were extremely interesting and instructive. Dr. Bergeman presented a paper on therapeutics, discussing more particularly the effects of four important drugs; the hour had grown so late by the time Dr.

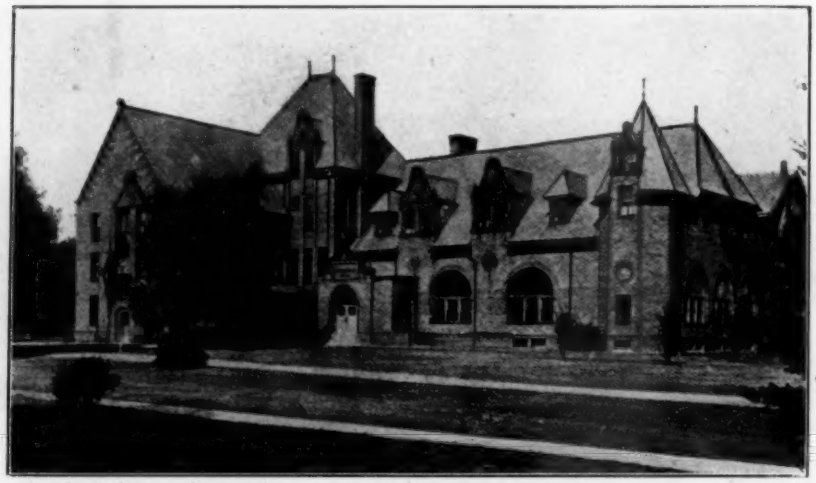


Agricultural Hall.

Bergeman had finished his subject, that discussion of it had to be foregone.

Wednesday dawned bright and cheery after the rain that had persisted all day Tuesday, with nearly two hundred veterinarians registered, and after disposing of considerable committee work, unfinished and miscellaneous business, Dr. J. W. Griffith, of Cedar Rapids, presented a paper on sanitation, in which he urged a closer supervision of milk production for cities. Instructive papers on surgery were then presented by Drs. H. E. Bemis, F. R. Ahlers and F. J. Nieman, which with some further committee reports, took up the forenoon. At 1:30 Prof. W. L. Williams, of Cornell University, began his stereopticon lecture on sterility, which was very much appreciated. Dr. Williams'

lecture was followed by a paper on peritonitis, by Dr. Wm. Drinkwater, and one by Mr. Geo. Judisch, professor of pharmacy at the veterinary school, on "Materia Medica—Progress and Problems." The papers for the day were brought to a close by Dr. F. R. Copeland, who described an acute disease among cattle with nervous symptoms which was very interesting. The election of officers which placed Dr. D. H. Miller, of Council Bluffs in the office of chief executive, Drs. W. A. Heck, West Liberty, and G. A. Scott, Waterloo, first and second vice-presi-



Margaret Hall, the Home of the Young Women of the College.

dents, respectively, and reinstated Dr. C. H. Stange as secretary, and the election of more than sixty new members to the association, completed the second day's work.

The evening was devoted to a banquet held in Margaret Hall, the home of the young women of the college, and given to the association and its guests by the Iowa State College and the citizens of Ames, at which more than two hundred of both sexes sat down. The food for the entire banquet was prepared and served by the young women of the college, students of home economics, and we feel assured that no better food or prettier service was ever given at any banquet, and the hall in which it

was served was a perfect flower show, so beautifully had it been decorated for the occasion. Another one of the uncommon features at a banquet of a veterinary association was a quartette, of which Dr. J. I. Gibson, of De Moines, was the leader, and his deep bass delighted the hearts of all present. One or two selections were given between each of the addresses; the one nearest to Dr. Gibson's heart being "Iowa," during the singing of which his face expressed great pleasure. Dr. H. E. Bemis proved a splendid toastmaster and preceded each of his introductions with

Central Building.

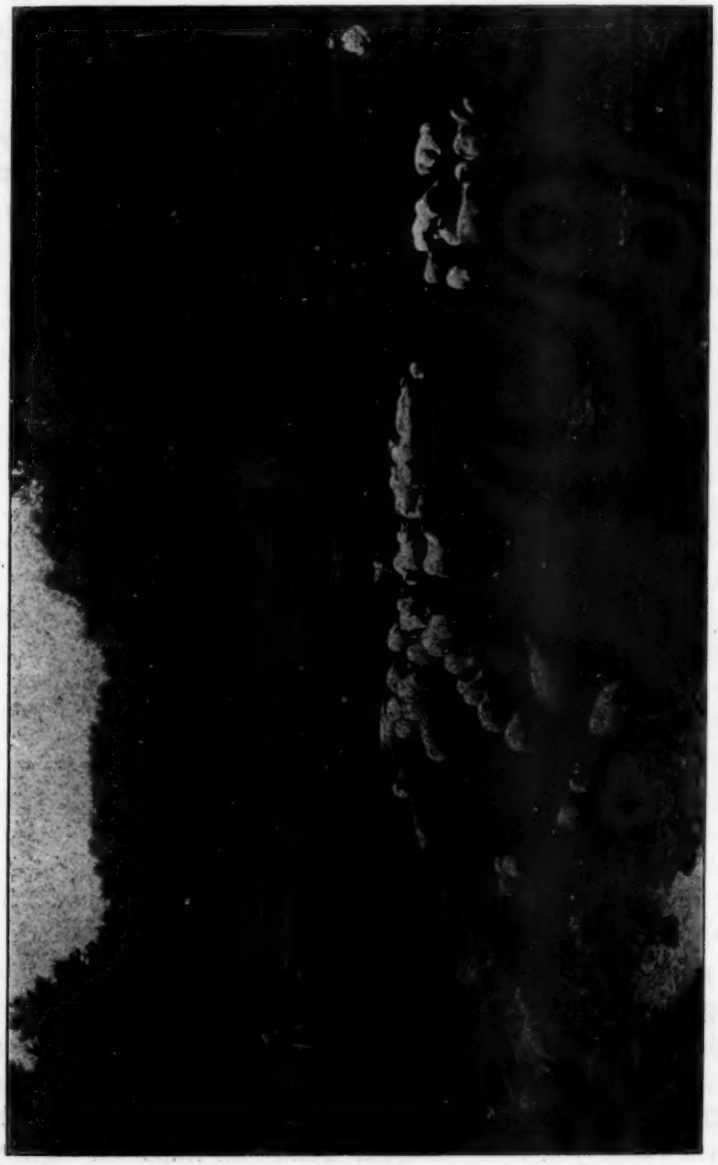
a humorous story. It was midnight when the festivities were brought to a close.

Thursday was given up exclusively to a surgical and diagnostic clinic, at which Prof. W. L. Williams did an operation for roaring, spayed a mare and mended a split ear on a pony. Dr. Bemis did a tracheotomy, Dr. Malcolm operated on an umbilical hernia, Dr. Miller on a cryptorchid, Dr. Nieman did a repulsion of the fourth molar and Dr. Stewart (Iowa) operated on a fractured rib. There was also a diagnostic clinic of cases of lameness, small animals, and, of great importance, hog

cholera subjects, over which post-mortem lectures were given by Drs. Niles and Dimock, which were very interesting and very instructive.

That, in brief, is an outline of the silver anniversary meeting of the Iowa Veterinary Association; minutiae and statistics will be furnished by Secretary Stange and published in a subsequent issue when received. But we cannot leave the beautiful campus without a look at its many excellent buildings, so before we go farther let us peep into some of the corners of the veterinary buildings we have not yet seen. One of the wonders of the veterinary school is its dean. The manner in which he managed to play the dual rôle of dean of the veterinary faculty and Secretary of the Iowa Veterinary Association the three days of the meeting was remarkable. He seemed to manage to keep in touch with his office and with the meeting in session at the same time. You walk into the assembly hall and you find him sitting on the platform beside President Sayers, recording the proceedings; you walk into his office and you find him standing beside his desk dictating to his stenographer, and while doing so he extends his cordial hand and welcomes you with a friendly smile. But you do not want to intrude too much upon his time, of which you know he has none to spare and you wander back into the building and suddenly find yourself in a large dissecting room with several horses on their feet suspended by hooks and chains, so that the superficial muscles can be dissected in the standing position. Over to one side you see an iron door in the floor which reminds you of those seen in the large killing floors of the abbattoirs, and your curiosity leads you to the floor below, where you find a rendering plant for the disposition of all the offal from the dissecting room; these were two things not described in the account of the college given in the October number of the REVIEW and you are glad you found them. Other features that interest you are the large operating rooms, the operating table and the "Rech-Marbaker," horse ambulance standing in readiness. But time presses and there is much to be seen on the campus that overlooks twelve hundred acres of col-

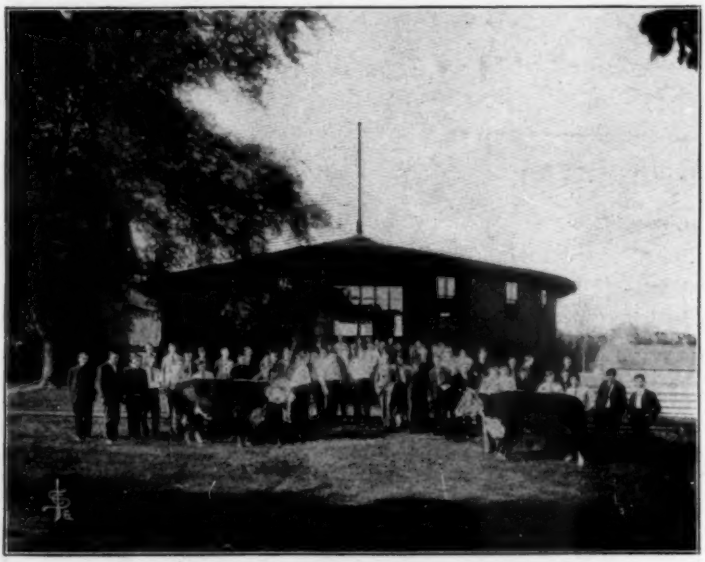
lege lands dotted with flocks and herds. So you journey up to the central building, in which the president, registrar and deans



A Flock of Sheep on the College Campus, Ames.

of some of the schools have their offices, it is the administration building, and you are impressed with its beautiful appointments

as you are pleasantly received in the several offices. Morrill Hall next holds your attention. You then go over to Agricultural Hall, the main building of which contains the offices and recitation rooms of the agricultural, engineering and veterinary departments, in addition to which there is also an annex, affording large and commodious rooms for drafting, reading, etc. Then you are desirous of seeing Margaret Hall, used exclusively for home economics work, and the home of the young women of the college. Your first visitation to it was at night, and you saw



Class in Stock Judging at Ames.

only the entrance and the beautifully decorated banquet hall, but now you are impressed with the beauty of the exterior. But you are desirous of seeing some of the stock and to know something of the breeding work at Ames, so you go down into the stables and on your way pass a flock of sheep. You pass through the cattle barns where you see fine specimens of Shorthorns, Black Angus, Herefords and many others, out into the horse barns, where you find "Dappel Tom," an imported eight-year-old Shire stallion, weighing 2,200 pounds, and another imported

Shire stallion, "Marman," five years old, not quite so heavy. The first one was imported as a three-year-old, and the second one as a two-year-old. These horses are used to cross on Percheron mares, and they are crossing Percheron stallions on the Shire mares. From here you pass out into the sheep pens where you see splendid specimens of Shropshires, Hampshires, Oxfords, Cotswolds and Southdowns; and continuing on you come to the hog yards, where you find that breeding is not being neglected, for you encounter some Hampshires, Berkshires, Poland Chinas and Duroc Reds. And just as you turn to leave the hog yards, standing on a knoll, you look across a little valley to a group of weanling colts in a paddock, in which are represented Clydes, Belgians and Shires, and you realize the advantages that such surroundings offer to veterinary students, and what opportunities they have of becoming proficient in stock judging. Then on to the dairy building, where you meet Professor Mortensen, who initiates you into the mysteries of how to make butter, cheese, ice cream, etc., by the latest machinery and with the least number of bugs per c.c. And so, although you have been compelled to hurry, you have gained an impression of the great work that is being carried on at that time-honored institution, the Iowa State College; and you can understand why all the men that you have met in your own profession that came from there are above the average. The facilities are there and a spirit of earnestness and honesty of purpose pervades the atmosphere. God bless old Ames!

THE HOG CHOLERA PROBLEM.

The problem of the prevention and control of hog cholera is so important and so perplexing, and therefore of such vital interest to rural veterinarians, that the REVIEW has given freely of a great amount of space to its discussion and elucidation during the last few years, and invites short to-the-point articles discussing this many-sided question. For until it can be definitely determined as to whether the serum-only method or the

serum-virus method offers the greater immunity against the disease and the greater protection to the hog owner the full value of either method will not have been realized. For so long as the profession is not in a position to be a unit on that, as any other question, its *clientèle* must of necessity continue in an unsettled state of mind. That there is not uniformity of opinion is not because the matter is not receiving attention; for it is receiving the very earnest attention of some of the brightest minds in the veterinary profession to-day; but as in all great problems, two sides are always presented; and if carefully presented and honestly met sufficient light must eventually be shed to remove the last shadow of doubt as to the safe and sane method to be adopted. In our October number we published the views of a recognized authority on the subject, Prof. M. H. Reynolds, of Minnesota, and in our November number an article by no less an authority than Prof. R. A. Craig, of Purdue University, while in our present number we have articles on hog cholera by Drs. C. D. McGilvray, of Winnipeg, Canada; F. M. Starr, Odessa, Missouri, and E. A. Buxton, Vinton, Iowa. We would suggest the reading of all these articles carefully and making a mental comparison of them with your own experiences, and then the brief compiling of the vital points as you see them, printed in the REVIEW'S pages, would make interesting and valuable reading for your professional brothers.

Resurgam.

It is with profound sorrow that we announce the death of Mrs. Samuel Brenton, of Detroit, Michigan, on November 23, 1912. Every member of the American Veterinary Medical Association sympathizes with its latest past-president, Dr. Brenton, in his sad bereavement; a sympathy shared by all veterinarians and their wives throughout the country; as the sweetness of character of this good wife and mother had endeared her to all whose privilege it was to know her.

ORIGINAL ARTICLES.

A REPORT OF OVER THREE YEARS' EXPERIENCE WITH THE SCHAFER PHYLACOGENS IN THE TREATMENT OF INFECTIONS IN HORSES*

By F. M. Sawyer, M.D.C., Bakersfield, Cal.

Although I have long realized from the great variation of the clinical symptoms in different cases of the same disease that many of the commoner infections are mixed rather than pure infections, the use of the phylacogens in the beginning seem emperical to me. However, I had great confidence in Dr. Schafer, whom I have long known, and besides I knew that for some months he had been obtaining wonderful results in the human field with exactly the same preparations, so I felt no hesitancy in using them on horses. Now that men of authority in the medical and veterinary world have taken up the use and study of the phylacogens, I am content to await their decision as to the true explanation of their effect rather than to attempt to justify my use of the phylacogens by offering an explanation of how they act therapeutically. I am actuated in making this presentation, however, because my long experience has convinced me that I can cure conditions surely and promptly with the phylacogen, which formerly were very resistent to treatment and not infrequently ended seriously.

In this report the writer to facilitate discussion presents his cases in two groups—"field cases" and "hospital cases." The former group includes cases treated at considerable distance, in which daily observation, daily treatment and records were not practical and where there was very little experienced help to carry out adjuvant treatment. In most of these cases two or three doses on consecutive or alternate days brought about cure

* Fourteen cases in connection with this report are published on page 334 this issue.

or such improvement that the animal required no further attention. For this reason the discussion of the field cases is mainly a statement of the general facts noted.

The latter group includes only cases treated in the hospital or at the owner's place, if close enough at hand to permit daily visits, treatment, and keeping records. The discussion of these cases brings out more of the special points and the case histories appended are selected from among this group.

At first I gave the phylacogens intravenously, but soon found I also had to give them subcutaneously; with an animal easy to handle and good facilities for operating and warming the phylacogens I give the dose intravenously; with an animal difficult to handle, poor facilities for operating and warming the phylacogen, I give the dose subcutaneously. I would add that in giving a subcutaneous injection I use a 1-inch needle and simply thrust it in obliquely—this very often gives a partial intramuscular injection.

I have never seen a sudden death follow immediately after injection, or even within three or four hours, except in terminal cases. This occurred a few times early in the work; now I never inject a terminal case without explaining to the owner the possibility of the animal dying in the reaction. The decision then rests partly with the owner as to whether the remedy shall be given or not.

At first the reaction obtained with the intravenous injections were very striking; rapid breathing, staring coat, staring eyes, trembling and muscular rigors came on rapidly in about that order and always accompanied by rapid, weakened pulse. In about half the cases sweating followed the symptoms. These symptoms were due to the large dose and at times no doubt to the phylacogen being too cold. In four cases prolonged rigors and convulsions occurred, but none of these cases terminated fatally. When first seen these symptoms caused me some worry, but after seeing quite a number of cases, I soon learned that they were not serious. These reactions, however, led to the reduction in dose, slower injection, greater care of the needle and syringe, and the warming of the phylacogens to body temperature.

The reaction with the subcutaneous injections are practically all local. At the site of injection there occurs in six to twenty-four hours a variable amount of swelling which may be painful or tender and persists for twelve to forty-eight hours—a rise of temperature occasionally followed by sweating are the only symptoms of general reaction I have noted. I have never seen rapid breathing, trembling or rigors following subcutaneous injections.

The appended tables give the list of conditions treated, number of cases of each kind treated and results obtained. They cover the period from June, 1909, to November 1, 1912. I would explain that in both tables under the heading of Distemper I have included only the catarrhal form of influenza, which affects colts and young horses, in which running from the nose, watery eyes, laryngitis and more or less glandular swelling are the most constant and predominant symptoms. Under the heading Influenza I have included all other forms of influenza.

TABLE OF FIELD CASES.

CONDITIONS.	Number of Cases.	Prophylactic.	Cure req. not more than 3.	Cure req. not more than 6.	Deaths.	PHYLACOGEN USED.
Distemper.....	250	100	120	25	5	Mixed infection; distemper.
Influenza.....	150	25	95	25	5	Mixed infection; influenza after April 1, 1911; pneumonia.
Poor condition.....	50	...	50	..	..	Mixed infection.
Abscess.....	25	...	25	..	..	Mixed infection.
Total.....	475	125	290	50	10	

TABLE OF HOSPITAL AND NEARBY CASES.

CONDITIONS.	Number of Cases.	Cure req. not more than 3.	Cure req. not more than 6.	Cure req. more than 6.	Deaths.	PHYLACOGEN USED.
Distemper.....	12	4	8	..	..	Mixed infection; distemper.
Influenza.....	25	5	11	2	7	Mixed infection; influenza; after April 1, 1911, pneumonia.
Surgical infections..	12	12	..	..	..	Mixed infection.
Laminitis.....	12	12	..	..	..	Mixed infection; also pneumonia.
Poor condition.....	5	5	..	..	..	Mixed infection.
Azoturia.....	4	3	1	..	..	Mixed infection.
Navicular disease...	1	..	..	1	..	Pneumonia.
Total.....	71	41	20	3	7	

Discussing the Table of Field Cases.

It will be noticed that this includes 475 cases. This may seem a large number, but as veterinarian for the Kern County Land Company the writer had opportunity in 1909 and 1910 (when distemper and influenza in a severe and malignant form were much prevalent) for treating three bands of horses, each numbering upward of fifty head, and on numerous occasions bands of five and the head were injected on successive or alternate days. From this it will be seen that the estimates given are really conservative, and this is also the explanation for the estimates appearing in round numbers.

Considering the Conditions in Detail.

1. *Distemper*—250 cases (1): Of this number I considered 100 cases as having been treated prophylactically, as they presented no symptoms at the time of injection. These received but one dose and were not reinjected unless they developed symptoms; less than ten cases needed a second dose and this despite the fact that no attempt was made to isolate them from those animals which presented definite symptoms. One hundred and twenty cases required not more than three doses, and 25 cases required more than three, and not over six doses to be entirely cured. Five cases terminated fatally. These were all cases of the irregular type, in which internal abscess was the complicating feature.

2. *Influenza*—150 cases (2): Of this number I considered 25 as having been treated prophylactically—they were treated the same as the distemper cases, none of these developed symptoms. Ninty-five head required not more than three doses, and 25 required more than three, and not over six doses to be cured. Five cases terminated fatally—these were all cases of the irregular type in which pneumonia occurred as an early complication. I wish to add here that none of this group which developed pneumonia got well, and this in spite of the very best possible attention.

(1) In this group of cases I used Mixed Infection Distemper Phylacogen.
(2) In this group I used Mixed Infection Influenza Phylacogen early in the week—after April 1st, 1911, I used Pneumonia Phylacogen.

3. *Poor Condition*—50 cases (3): This is a rough estimate, I feel sure there were more cases. None of these required more than three doses. I followed the routine of giving one dose (usually 15 c.c. intravenously) and following with a second dose (usually 30 c.c. intravenously) if necessary at the end of seven to ten days. I consider the results in this class of cases very wonderful. Early in the work I noticed that no matter for what condition I gave the phylacogen the animal, after being cured, was invariably much improved in general strength and picked up noticeably in weight, so constant was this that after five or six months' experience I began to give the phylacogen to horses that were in poor general condition and could not pick up in weight.

4. *Abscess*—25 cases: In this group I include only very large abscesses; here I followed the plan of supplementing the surgical treatment with one or two doses of mixed infection phylacogen, and invariably obtained such rapid healing that the phylacogen had to be credited with the result. None of these cases received over three doses. Right here let me add that in any condition where there is localized pus formation the phylacogens can produce a cure only if proper surgical drainage is made. This explains why in diseases complicated with internal abscess no cure can be brought about by giving phylacogen. In these cases one gets a typical reaction with a rise and fall of temperature, and even relief of pain, but it will be noticed that in such cases the temperature never goes quite down to normal (it may go very nearly to normal) and in a few hours (six to eight at the most) begins to go back up to where it was before the administration of the dose. The pulse here usually stays rapid and weak, instead of getting slower and stronger as is the case when cure follows—the animal gets rapidly weaker and the phylacogen if persisted in under such conditions adds materially to the burden of the beast.

Summary of Field Cases.

Administration—Not more than one-third of the cases received intravenous injection. This included the older and better

(3) In these cases I used Mixed Infection Phylacogen.

horses, which also received adjuvant treatment when necessary. The balance received subcutaneous injection—these included suckling colts, yearlings and young animals.

Site of Injection—In intravenous injection, the jugular vein is used. I usually alternate from side to side, choosing a point about 1½ inches away from the previous injection. Subcutaneously, I usually give it in the neck, except in suckling colts where I give it just back of the shoulder.

Dose—In the beginning I gave 15 to 60 c.c., whether given intravenously or subcutaneously, except in young colts, where I gave 7½ to 30 c.c. Since March, 1911, I give 7½ to 30 c.c., except to colts; these I give 5 to 15 c.c. In the subcutaneous method it has been and is my custom to give the maximum dose from the first, while in the intravenous method I start with the minimum and gradually increase the dose as necessary.

Reaction—As above stated, the reaction with the intravenous method were severe early in the work. Since January, 1910, the usual reaction symptoms which I obtain are uneasiness, increased rapidity of breathing, urination, occasionally trembling with staring coat; in a few cases the animal lies down. In the subcutaneous method the reaction is practically all local.

Interval—In this class of cases 24 to 72 hours. This was due to the number of injections and the attending circumstances. It was the aim to inject these cases every 24 hours, but if this was inconvenient for any reason the injections were often postponed 24 to 48 hours, making the interval as above stated.

Results—It will be noticed that there were deaths only among the distemper and influenza cases—in both of these groups they were all cases in which the animal when first seen had irregular symptoms. Those of the distemper group were complicated with abscess formation internally; those of the influenza group were complicated with pneumonia. In quite a number of these cases the conditions were verified on opening the animal after death. Ten deaths in 400 is a very low percentage, considering the severity and malignancy of the distemper and influenza prevalent at the time, and the number of colts and young horses

affected. I have included the prophylactic cases in the total of cures, because in my experience when distemper and influenza get into a band of colts and young horses very nearly all get it before the disease is stamped out.

DISCUSSING THE TABLE OF HOSPITAL AND NEAR-BY CASES.

This lists but 71 cases. I have included only such cases as were treated in the hospital or near by where it was practical to see and treat the animal every 24 hours and keep a record of the treatment and clinical condition.

Considering the Conditions in Detail.

1. *Distemper*—12 cases: Of these, four cases required not more than three doses and eight cases required more than three doses and not over six doses to be cured. In this group of cases there were no deaths. All of these cases were of the severe form and some were brought in for treatment after being worked for a number of days while they were sick—this accounts for the greater number of doses necessary. Many cases were lost at this time before the phylacogen treatment was instituted.

2. *Influenza*—25 cases: Of these, five cases required not over three doses, 11 cases required not over six doses, and two cases required upward of six doses to be cured. All of these cases were of the severe form, and some were brought in for treatment after being worked for a number of days while they were sick. This accounts for the greater number of doses necessary. Seven cases terminated fatally. These were all cases which presented pneumonia symptoms when first brought in for treatment.

3. *Surgical Infections*—12 cases: This includes four large abscesses, three infected punctures, four infected lacerations and one bursal infection. In these cases I routinely gave only three injections and invariably was rewarded with rapid healing. Cases which ordinarily run from three to four weeks usually get well in from ten days to two weeks. The animal is early relieved of pain and is able to work much sooner.

4. *Laminitis*—12 cases: None of these cases required over

three doses to be cured. The results in these are very prompt, and the condition seems entirely overcome—no tenderness remains and the animals can go to work on the fifth or sixth day. In five of these cases I have had opportunity for subsequent observation and there has been no recurrence. Of special interest is the fact that the last two cases treated made a very prompt striking recovery with pneumonia phylacogen which I gave because I was out of mixed infection phylacogen.

5. *Poor Condition*—5 cases: None of these cases required more than three doses. All were treated intravenously with two doses mixed infection phylacogen, at a seven to ten-day interval. This is a condition which I recommend for the serious consideration of the veterinarian; many horses can be much increased in value by this treatment.

6. *Azoturia*—4 cases: Three of these cases received five doses; one case received five doses. In all of these cases I gave the phylacogen as adjuvant treatment, expecting thereby to control the infective complications of the urinary and enteric tract—all of the cases received the regular approved medicinal treatment besides. In these cases I gave the mixed infection phylacogen subcutaneously in doses of 15 to 60 c.c.

7. *Navicular Disease*—1 case: This required eight doses and was given pneumonia phylac. I was actuated to treat this case with phylacogen because of the rather prompt and complete results obtained in two previous cases of severe laminitis, both of which received pneumonia phylacogen because I happened to be out of the mixed infection phylacogen. After the second dose the animal was much relieved of pain, and after the fourth dose seemed entirely free from pain. Because of the special interest I have appended this case history in detail.

Summary of Hospital Cases.

Administration—Before April 1, 1911, about one-half of the cases received intravenous injection. Since then practically all have been treated intravenously.

Site of Injection—As given on page 278. Right here I wish

to say that in the intravenous method the care of the needle and syringe is the important thing. There is more danger in injecting a small drop of oil or a small shred from a syringe plunger, or a small blood clot than from any amount of air that could be injected with a syringe under usual conditions. The following is my routine for taking take of the needle and syringe: After making an intravenous injection, I carefully rinse the needle and syringe barrel with cold water which may or may not be sterile, I then rinse in 95 per cent. alcohol, which removes all the water and allows the syringe and needle to dry without rusting. I always replace the wire in the needle. They are then ready to be put away until needed again, when all must be boiled before using. This method is especially effective in keeping a needle smooth inside—a very important point in avoiding small blood clots in the butt or shaft of the needle. In opening the phylacogen container I use three or four ply of gauze saturated with 65 per cent. alcohol, with this I remove the rubber cork, laying the same down carefully in the gauze; I then withdraw with the syringe the amount of phylacogen I wish to use *through the needle,* after which I carefully replace the cork, holding the same with the gauze saturated with alcohol—this prevents contamination of the phylacogen as effectively as is possible under the ordinary circumstances with which the veterinarian meets in his work and the remainder can be kept for several days and used at will.

Dose—I now give 7½ to 30 c.c. whether given intravenously or subcutaneously. In the subcutaneous method I usually start with the maximum dose and continue it throughout. In the intravenous I start with the minimum dose and increase as necessary. The rapidity with which I increase the succeeding dose depends entirely upon the degree of reaction obtained with the preceding dose—with no reaction or very mild reaction I double the dose and give it 24 hours later—with a moderate reaction I increase the dose one-half and give it 24 hours later—with a strong reaction I repeat the dose and give it 24 hours later. In very young colts I have found 15 c.c. a very effective subcutaneous dose.

Reaction—Of late the usual symptoms of reaction which I obtain with the intravenous method are uneasiness, increased rapidity of breathing, staring coat, urination and occasionally trembling and lying down. With the subcutaneous dose the reaction is practically all local. It is my custom to explain to the owner what symptoms may be expected after an intravenous dose; I also inform him that considerable swelling follows the subcutaneous dose. This reassures the owner and often saves considerable time.

Interval—In this class of cases it is invariably 24 hours.

Results—It will be noticed that there were deaths only in the influenza cases. Seven deaths in 25 cases seems a high mortality. However, these cases were all cases in which the animal was brought in late for treatment and presented symptoms of pneumonia—three of these cases had been worked up to the time they were brought in for treatment. In all of the cases it was evident that the animal had very little resistance left when brought for treatment. I considered all these cases terminal cases, and in each instance explained to the owner that the animal had little or no chance for recovery and that I was giving the phylacogen as a last resort. It will be noticed that 13 of the 18 cases which were cured required six doses or upward. This is explained in the same way; *i. e.,* the animals were brought in late for treatment.

From My Experience I Conclude That—The phylacogens are safe therapeutic agents to administer. I point to the large number of cases, 546, injected without a single death that could be directly attributed to the administration of the phylacogen and to the occurrence of alarming rigors and convulsions in less than 10 cases.

The phylacogens are practical for use in the regular routine work of the veterinarian—both in his outside work and in hospital work.

The phylacogens are economical in cost. They cost less than serums. Because of rapid cures obtained, they cut down loss by hastening the animal's return to work. They cut down cost by

shortening the time during which the animal needs the attention of a caretaker. They improve the general condition of the animals, as they usually gain in weight and strength after a course of phylacogen.

The phylacogens are reliable therapeutic agents. I point to the fine percentage of results obtained in my experience and the period of time—over three years—through which they have continued to give good results at my hands. I consider this very convincing.

In closing, I will suggest that the veterinarian, to acquire experience and gain confidence in his "working stroke," begin the use of phylacogens by administering them subcutaneously, and at first only to hospital cases or cases sufficiently near that daily observation and treatment is practical. I can assure any veterinarian who believes that the bacterial preparations have a place in therapeutics, that the phylacogens are the very best of this class of remedies and their intelligent use will give him good results far beyond his expectations in many refractory and serious conditions.

During the period when Dr. Schafer was making the Phylacogens in his laboratory, in Bakersfield, Cal., it was his custom to keep up his cultures of the various organisms used in making the Phylacogens by obtaining fresh growths whenever opportunity was afforded by outbreaks of infection in both veterinary and human field; so it was quite natural that he availed himself of cultures from the horses suffering from distemper and influenza, so that he could add these two factors to the basic Mixed Infection Phylacogen, thus conforming to the idea of giving a predominant factor to the phylacogen, intended for treating a condition known to have a predominating causal organism. The names Mixed Infection Distemper Phylacogen and Mixed Infection Influenza Phylacogen were therefore necessary at the time to designate and differentiate these two from the other phylacogens—pneumonia, erysipelas, etc. My thanks are also herewith extended to the veterinary biologic and research department of Parke Davis & Co. for the courtesy of experiments and supplies of phylacogens, which enabled me to continue my work after Dr. Schafer discontinued making the phylacogens in Bakersfield.

POTENT TWIN BULLS.—On page 723, issue of October 9, I read with interest G. T. Burrows' article on the free martin heifer, especially the translation from Spiegelberg. In Dean Davenport's "Principles of Breeding" (note at bottom of page 176), the same statement is found (quoted from Geddes & Thompson's "Evolution of Sex"). I remember that a Short-horn cow owned by Conrad Welch, then a resident of Fulton County, Indiana, gave birth about 1892 to twin bull calves, both of which were afterward used as sires in the neighborhood, so I know perfectly normal twin bulls may be born.—John T. Montgomery in *Breeders' Gazette.*

ARTERIOSCLEROSIS EPIDEMIC IN SHEEP.

By Fred Torrance, M.A., D.V.S., Ottawa, Can.

Translation of an Article by Prof. Jose Lignieres, in the Revista Zootecnica for August, 1912.

In 1898 I published the result of my first studies which was observed to be contagious among cattle, horses and sheep belonging to certain districts in the Argentine Republic.

In the bovine species the disease was known before my arrival at Buenos Ayres, and called by the name of "Enteque," an improper term, which signified "etisis" or extreme weakness (flacura), and also made itself known by the spongy ossification of the lungs which served to characterize it.

I showed that the pulmonary lesion was not the principal one and that it should be looked for in those arteries which are always attacked by lesions of arterioselerosis more or less generalized. These lesions are often met with in the arteries when the spongy ossification of the lung does not exist at all.

I have been able to follow the disease from its inception when not existing in the calf of eight or ten months, and the intestinal disturbances, which exist in the majority of cases in an infectious chronic enteritis. In the animals affected by this diarrhœa, and which resist the disease, are found lesions of the arteries, in the beginning discerned on the common aorta; they presently extend and become hard and can become generalized throughout the arterial system and as far as the pulmonary artery. When the arterial lesions are important, you may find lesions of spongy ossification in the lungs.

The arterial and pulmonary lesions of "Enteque" are generally preceded by digestive disorders, so that there is reason to believe that these disorders indicate as their origin an intestinal infection.

I showed that the horse is also attacked by the disease, but I

have never met in it the spongy ossification of the lungs, even when the arteriosclerosis was considerable.

In the sheep chronic arteritis is also found, but no pulmonary disturbance. Only recently have I observed it in a genuine outbreak of " Enteque " among a large flock of Lincoln sheep in the Province of Buenos Ayres in the region of Castelli.

I published in the *Revista Zootecnica* for the month of October, 1910, a brief note in which I made known for the first time the possible existence of lesions of spongy ossification in the lungs of sheep.

To-day I am giving greater details concerning this disease of sheep in order to discuss the cause to which it is attributed by Dr. Fedorico Sivori in his treatise published in the *General Review* of March 1, 1912, under the title of " La Mancha in Sheep " (Mancha=stain or spot).

I cannot have any doubt regarding the identity of the disease studied by Dr. Sivori with that which I have observed since our investigations were carried on in the same period and in the same country district.

Symptoms.—In the sheepfolds attacked the animals appeared to be in good condition, except some which seemed to be weak and anæmic.

It is not difficult to know the sick ones. It is only necessary to hurry them up a little to see, in following, that some of them lay behind or stop, with their flanks very much agitated, and the dejected look of animals whose breathing is difficult. These animals are sometimes found to be in an excellent state of nourishment, and do not appear at first sight to be suffering from an infection. They eat and drink perfectly.

It is an important point to notice that natural death may come on even during sleep (rest), suddenly and sometimes painlessly, as in the case of carbuncle, a disease with which, by some people, this has been confounded.

Also, accidents, sometimes fatal, can be produced. For this it is enough to frighten the sheepfold to oblige all the animals to run. Then the sick ones stop suddenly, some fall to the ground and die as if delirious.

Lesions.—After death, those animals whose digestive tubes are found full of food, swell up immediately. Sometimes a foamy serum, red in color, flows through the nostrils, which tends still more to confuse the disease with carbuncle.

If the skin is drawn out, the subcutaneous capillaries are found gorged with coagulated, highly colored blood, some pale, forming in the conjunctive tissue numerous arborizations (1). Especially in the case when the autopsy has been delayed, the tissues of the side on which the body has been stretched out on the ground, are found to be infiltrated with a red serum or with gelatinous oedema. In different parts are found very dark "placas" (2) lit. stars). forming spots or stains on the skin which are almost black. Hence, the name of "Mancha" (spot or stain).

The muscles, like the blood, keep their normal tint or are pale, infiltrated with serum, according to the state of nourishment or of anæmia of the animals.

In the serous cavities, peritoneum, pericardium, pleura, there is frequently met a quantity, sometimes a considerable quantity, of serum of a bright lemon or reddish color.

Generally, the digestive tube is found congested, full of gas, and the bloody arborizations are very visible. The red infiltrated mucus is easily drawn out.

The spleen, the liver and the kidneys are also often very congested, but, contrary to what occurs in the case of carbuncle, the spleen presents more or less its normal volume.

The lungs are always found infiltrated, edematous, congested and even hepaticized in different parts. In some cases there is situated in them a quantity of small bodies, hard and elongated, in the shape of needles, which break (crack) easily between the fingers, and formed by a true spongy ossification. The vain of the neck contains blood which reddens in the air and coagulates. The aorta is hard and thick and inelastic to the touch. At the opening are met at its base lesions of arteriosclerosis, at times enormous, like those which I am showing in the attached illustration. These lesions by themselves explain

the accidents occasioned by violent and prolonged movements. Death is produced by asphyxiation due to oedema or congestion of the lungs.

I should note that these congested lesions of the viscera are observed in the case of death, but they are not discovered if the animals slaughtered are still healthy in appearance.

A fact of importance consists in the finding, in some sheepfolds attacked by the disease, or lesions of tuberculosis with the Bacillus Preisz-Nocard, a disease rather generalized in the Argentine. In other cases these lesions do not exist (in any manner, as we see it further off).

In the sheepfolds attacked, the disease is observed in the males as in the females, but never in lambs under this form. It lasts some months, causing the death of several animals daily, almost always in winter. I saw a flock of 6,000 head lose 700 between May and October, 1910.

Here is the result of an experiment which demonstrates the gravity of the disease, its duration, the possibility of diagnosis, the production of sudden death even in a state of complete rest, and, finally, the variable aspect of the secondary lesions and the constancy of the lesions or arteriosclerosis.

On October 17, 1910, there arrived at the laboratory five sick adult sheep, sent from an owner in Castelli, where they were selected for our experiments. These animals were immediately placed in small corrals. In all of them the auscultation revealed grave cardiacal disorders and the percussion proved mastitis or sub-mastitis, almost wholly in the lower part of the breast.

Three of them were found in a good state, the other two were weak and anæmic. One stayed on the ground, unable to rise, with discordant breathing. The practitioner bled one to make a study of the blood and serum; then killed it.

Here are some of the observations of the autopsy. The subcutaneous conjunctive tissue is humid; in the muscular interstices is a transparent serum; there was even found fat in rolls with serum. The blood is rather pale, but the muscles preserve dark tint.

In the peritoneum is found about a litre of clear liquid. The digestive tract was found almost empty of food owing to the fast of the journey and the change of diet which the animals suddenly underwent in going from a green to a dry pasture. The mucus of the digestive tube had in different parts scattered red plaques. The spleen was of its normal volume; the liver and kidneys showed nothing out of the ordinary, nor did the lymphatic glands. In this case the bleeding had impeded the formation of congestions which characterize the lesions in those animals which succumb naturally and has not produced intestinal fermentations.

In the thoracic cavity were found ten litres of rather limpid serum, slightly yellowish (jaundiced). In the lungs were some hard spots, hepaticized. Their edge was compact, homogeneous, granulated and "violaceo." There was no spongy ossification in the pulmonary tissue.

The anterior and posterior aorta, as far as the lumbar bifurcation, present very marked lesions of arteriosclerosis. The pulmonary artery is normal.

The following days the other animals became accustomed to the dry diet; they appeared to improve.

On the 26th of December, 1910, one of them died, nothing being noticed the evening before. The animal was swollen. I discovered on the side on which the body was lying plaques of a dark red tint. In the intermuscular conjunctive tissue was seen a great quantity of serum of a reddish tint; there was no fat. In the peritoneum, pleura, and pericardium was found a good deal of red serum.

In the oedematous lungs were found some lesions of spongy ossification; the aorta contained chronic hard arteritis.

The spleen is soft with its volume scarcely increased; the kidneys and the liver congested. The open digestive tube from one end to the other showed some colored plaques in the mucus of the large intestine.

On the 12th of May, 1911, another animal died without any appearance of disease. It was well nourished, its blood was a

dark color, the muscles normal in color and containing a little serous infiltration in the tissues.

The liver, the spleen and the kidneys were very much congested. In the serous cavities was a serum that was scarecly red; in the lungs was observed generalized oedema, spongy ossification; in the arterial vessels were marked lesions of arteriosclerosis.

The intestines were found filled with food, the small intestine arborized by the capillaries; to the touch the intestinal wall was found rather infiltrated, the mucus highly colored.

The 2d of July, 1911, the second last animal died. The evening before it seemed to be very well. A colored foam was flowing from the nostrils. The animal was found in a good state of nutrition without anæmia. There was especially noted in the thoracic cavity a great quantity of lemon-colored serum; there was also in the peritoneum a little yellow liquid.

The small intestine, as in the preceding animal, was found very much congested; the spleen, with its normal volume, was dark in color; the liver, the kidneys were found gorged with blood.

In the oedematous lungs were distinct lesions of spongy ossification. The lesions of arteriosclerosis were very pronounced.

As in the other cases, there were serous infiltrations of the tissues. The blood is a dark color and coagulates well.

Finally the last animal died suddenly July 8, 1911, with the same lesions as the preceding.

In every case were made bacteriological investigations and numerous inoculations, but that part of my investigations which refers to the etiology of arteriosclerosis is still in coure of study. I limited myself to saying only that when the animals die the blood is almost always sterile, as also the viscera, and, in the meantine, when describing the dead animals, that the microbes found are sometimes numerous and belong to different species.

The Bacillus Preisz-Nocard has not been met with in any of the five animals whose history I have just finished relating. I have only met it in other cases when co-existing with purulent lesions of pseudo-tuberculosis.

What is the cause of the disease in sheep and of its principal characteristics which I have sketched?

In his work, Dr. Fedoric Sivori, Professor in the University of La Plata, maintains that it is a case of an acute intoxication due to the toxin of the Bacillus Preisz-Nocard, and since entitling his memoirs "La Mancha in Sheep," a name which he himself recognizes as unsuitable on account of the confusion which it caused, he proposed the name of "Sheep Toxinemia of the Bacillus Preisz-Nocard."

There is, according to this professor, a connection between this discease and the Red Disease studied in France by Carre and Bigoteau, and caused, according to these authors, by the toxin of the Bacillus Preisz-Nocard.

If the treatise of Dr. Sivori had not appeared in France, there would certainly not yet have been any publication by me concerning the disease which occupied us.

It has seemed to me that I should not dismiss without discussion the thesis of Dr. Sivori, taking chiefly into account his criticism of my works on the "Enteque."

What especially occupied the attention in Dr. Sivori's treatise was that he arrived at the conclusion of the preponderance of the Bacillus Preisz-Nocard, although only once has it been isolated in the body of sick animals. For that there was made an injection of 22 c.c. of the serum from the pleura of sheep No. 3 into the thoracic cavity of a healthy sheep and 20 c.c. under the skin.

The animal died after 14 days. At the point of the subcutaneous injection there was found to have formed a purulent, caseous spot, as also in the pleura and in the lung at the level of the inoculation.

It is clear that the product injected into the sheep referred to came from an animal accidentally attacked with pseudo-tuberculosis. But it is not therefore demonstrated that the microbe of this disease is met with in every case.

The other experiments of the author prove, on the contrary, that the Bacillus Preisz-Nocard does not always exist in the

carcasses and that its presence in the last case was not only a coincidence.

In fact, on Page 244, Dr. F. Sivori writes: "Regarding sheep which have died from "La Mancha" we notice immediately after death blood, serum of the sero-sanguinary oedema, disturbances of the "esplancicas" cavities.

The aerobic and anaerobic cultures do not permit the isolation of the specific agent of the disease.

The blood of a sheep, examined immediately after death and injected with doses of 3 c.c. in the peritoneal cavity of a guinea-pig, does not give any result.

The pleural serum examined under such conditions and injected in doses of 4 c.c. beneath the skin of a guinea-pig causes simply a little oedema which disappears at the end of 48 hours without any ulterior result. The injection of 40 c.c. of the same serum in the pleural cavity of a healthy sheep gives no result.

It is not necessary, then, to invoke my own experiments to demonstrate that the disease in sheep exists without the slightest trace of the Bacillus Preisz-Nocard.

Dr. Sivori has also made a statement which is of importance. On Page 255, he claims (?) with reason that sheep containing abscesses caused by the Bacillus Preisz-Nocard, are not more sensitive to the toxin of this microbe, which can be injected with impunity, even in doses of 3 c.c., which will a "testigo" in 40 hours.

But, then, how has this toxin power to kill in spontaneous "Mancha" sheep which contain abscesses with the Bacillus Preisz-Nocard as those which "senala" different times in their autopsies? The long duration of the disease is also opposed to his hypothesis of a toxic fulminating action. I recorded that the sheep brought from Castelli to the laboratory at Buenos Ayres died, one after two months, another after several months, and the two last after nine months. Their death was sudden and the lesions were identical with those which were found in the animals which died in the infected areas.

I could give other reasons too, but it seems to me useless to

pursue the subject. Neither the Bacillus Preisz-Nocard nor its toxin have any connection with the epidemic among sheep in Castelli (1).

From a clinical point of view, it seems to me very easy to explain the delirious death of the sick animals as a consequence of the enormous lesions of arteriosclerosis. The oedema, the serums, are the result of the impeded circulation, as well as the congestion and the oedema of the lungs, which cause the rapid asphyxiation and death.

To get at the actual cause of arteriosclerosis constitutes the object of investigations which have not yet ended. I can unhesitatingly say that I am convinced that it is due to a microbic affection of intestinal origin.

Conclusions.—The epidemic among sheep of the district of Castelli (Argentine Republic), described recently by Dr. Fedoric Sivori under the name of "La Mancha," or Sheep Toxinemia with the Bacillus Preisz-Nocard, and compared with the Red Water of Senors Carre and Bigoteau, cannot be attributed to this microbe, because it has been totally lacking in the majority of cases, and also because the disease, in view of its delirious (fulminante) type which can be seen in a first examination, is, on the contrary, a chronic affection lasting several months, and even several years. The hard, and often generalized lesions of arteriosclerosis found in all the sick animals, explain perfectly the phenomena observed and especially the delirious death.

Investigations are still necessary to determine the real cause of those genuine epidemics of arteriosclerosis whose origin appears to be intestinal affection.

(1) I propose at the first opportunity to examine the new and original method of diagnosis of the infections with the Bacillus Preisz-Nocard brought out recently by Senors P. Forgeot and E. Cesari.

MARRIED.—Mr. Charles Lamson Kelley was married on November 14th to Miss Kate Louise Beckley. daughter of Dr. and Mrs. Edgar Miles Beckley, Meriden, Conn. We wish the young people all the joy that wedlock brings.

THE NATURAL AND ACQUIRED QUALIFICATIONS OF A SURGEON.*

By Dr. R. C. Moore, President of the Kansas City Veterinary College.

The qualities of the surgeon are subject to at least two divisions: First, into those traits or qualities derived from ancestors either near or distant, inborn natural ability or that inheritance of the Creator that adapts one for a certain thing or calling in life; second, those qualities acquired during life, by training and practice.

Dr. W. J. Mayo, the noted surgeon of Rochester, Minn., has well said, " Our spoken language recognizes the truth in the word 'calling.' May not this be the way the Great Creator calls men to do his work in the various walks of life? "

History proves conclusively that to man has been given the power to meet every condition of life. No matter how great the necessity, some one has been found with the essential qualities to meet it, and in these individuals we find developed those traits or natural qualities that enable them to succeed in that particular thing, where others would have failed. This does not dispute the Divine Power of direct intervention, but proves the plan of human agency, so truly, " Man's extremity is God's opportunity." This principle is surely as true in the minor details of life as in the great crises of the world.

To become a surgeon it is not only necessary that the individual possess the natural ability to do surgical things, but it is also important that he should possess the qualities of a man in the broadest sense of that word. A man of strong character, sober, industrious, with broad philanthropy, keen perception, a determined will, a kind heart and uncompromising integrity, and one who honors truth for truth's sake. Possessing " the heart of a lion, the eye of an eagle, and the hand of a woman."

* Presented to the Forty-ninth Annual Meeting of the American Veterinary Medical Association, at Indianapolis, August, 1912.

The true surgeon has in mind only the welfare of his patient. Kindness should be his motto, and firmness to follow his convictions his password. The man who is cruel, unsympathizing and heartless, no matter how skilled, has no more right with the surgeon's knife than the crudest workman has with the sculptor's chisel. No true surgeon will cause the slightest unnecessary pain, yet with all h eis governed by judgment rather than sympathy.

A nervous individual is not calculated for a surgeon, as he is always subject to unnecessary errors. Deliberation of action is essential to the end that everything needful be done and no tissue be unnecessarily injured. If methods are not precise, needful things are likely to be omitted.

Courage is also an important factor. At times the surgeon must assume great responsibilities, and if he has not the courage to assume these promptly, the result may be disastrous. Promptness is of equal importance. No doubt many animals die for want of prompt surgical interference, as often a few hours will carry the patient beyond the possibility of successful surgical assistance.

A fearless disposition, steady, kind, firm, and a commanding way is of vast importance in veterinary surgery. Our patients usually recognize fear and timidity in those handling them, and are apt to take advantage of it. Likewise our clients and the bystanders are quick to note this defect and prompt to publish it to the surgeon's discredit. The owner and attendants of our equine patients are usually good horsemen and are often ready, and perhaps " rightly so," to criticise the lack of the same in the veterinarian.

I would not underrate careful, deliberate preparation, but emergencies arise that must be met promptly, and it is then that the surgeon must have the courage to act immediately and do the best he can under the circumstances. One should not fear criticism, for if he is satisfied that he did the best he could, that satisfaction is better than pleasing a multitude.

It is true that our country is fairly alive with surgeons. Is it true that they are successful? How many of them do things simply as they are taught to follow step by step some previous

instructor and when something out of the ordinary presents itself they are conspicuous for their lack of ability to devise a method of treating it?

Beware of the charlatan in our profession; whether he is an undergraduate or the possessor of a veterinary degree, if he follows the steps of a quack, he should have the brand. He who professionally, or otherwise, commits an act that tends to lower the professional or moral standing of the veterinarian, strikes a blow at every member of our profession. We should not be too free to condemn, for it must be remembered that mistakes extend even to the President's chair, but to uphold a premeditated, non-professional, dishonest act or to shield one guilty of such, is scarcely less detestable than to commit such an offence.

Is the judgment of the surgeon not too often influenced by mercenary consideration? Industrial economy enters more largely into our professional work than it does into that of our brethren who are charged with the welfare of human kind. As a rule, the animal is bred, reared and cared for to be of service or pleasure to its human owner. The right of the owner to use such animals for his pleasure or profit, even to the taking of its life, so long as he does not treat it cruelly, has not been seriously questioned. Recognizing this right, it would be the duty of the veterinarian to recommend the humane destruction of the patient whenever in his judgment, his skill as a surgeon cannot restore the animal to a condition of reasonable service or pleasure to its owner.

Too often operations are undertaken where the very nature of the case indicates so long a period of convalescence, or of so doubtful a termination that the treatment would be unprofitable to the owner, also the animal would suffer pain without profit and the surgeon lose his reputation and his client.

Public sentiment favoring humane treatment of defenceless animals is rapidly increasing all over the civilized world, and none should be more interested in its advancement than the veterinarian. So when a veterinarian causes serious or prolonged pain in the performance of surgical operations without the use

of anaesthetics, either general or local, he brings criticism upon himself and his profession. We are living in an advanced age of surgical success, and more is expected of us to-day than ever before, and we should ever be mindful that the requirements of man are in proportion to his opportunities. The one who does not give the best he has is unworthy. He owes it to himself, his client, and most of all to his patient, that every avenue of possible pain and danger be safeguarded.

The acquired qualifications of a surgeon should perhaps outnumber his natural ones, but they would be of little value did he not possess at least a reasonable share of the latter.

It has been said that "surgeons are born, not made." While this statement is the essence of truth, it may often lead to grievous error, for sometimes an apparently small amount of natural ability will develop to magnificent proportions under proper influence, supported by a determined will and ceaseless energy.

Surgery is an art and may well be classed as a fine art and students of the arts who become masters usually spend long periods of service under competent instructors. Why should he who would become a surgeon be exempted from such teaching?

The fundamental principle in the cure of disease is a correct knowledge of the conditions, hence the first acquired qualification for a surgeon is ability as a diagnostician, and to attain this one should begin at the lower round of the ladder. He first becomes familiar with all tissues of the living animal, including their form, structure, relation and action; second, he gains a substantial knowledge of disease, including its cause, anatomical changes it may produce and the effect of such changes on other organs. As the cure must depend upon the removal of the cause, he must know what effect the removal of that cause will have upon the individual. If this is not understood, the animal may suffer needless pain and inconvenience. When these things have been carefully considered and the competent surgeon has reached a conclusion that a certain operation is necessary for the good of the animal and welfare of its human owner, he should then have the firmness of purpose to carry out that operation to its complete

termination. The owner should be fully acquainted with every possible danger, and when he with this knowledge consents to the operation, the case should be fully in the hands of the surgeon who should enforce his rights to complete the operation regardless of the whims of the owner. A steady nerve, deliberate action, exactness of location and precision as to methods are all essential.

The surgeon should be an untiring worker. No matter how well one has mastered his anatomy, physiology, pathology, bacteriology, etc., unless the memory is often refreshed, that clearness of relation so essential to successful surgical procedure is lost. The laboratory offers the best opportunities for this much needed review, but it is not the only opportunity. I fear too few of our practitioners of veterinary medicine and surgery, either general or special, avail themselves of the almost unlimited opportunity offered for careful autopsies.

How many of our brothers practicing human surgery would consider the opportunities of holding autopsies that we neglect as most favorable for their advancement, did not law and custom prevent? Not only are we thus privileged to ascertain the pathological lesions that caused the death, but to refresh our minds on the normal structure as well. These are not all the advantages which are at our pleasure for we are favored with an almost unlimited opportunity to practice the various surgical operations on the cadaver.

Someone has said in discussing the training of the human surgeon " that the boy so destined should be taught the principles of evolution, natural science, the general laws of plant and animal life, and especially comparative zoology, elementary physics and chemistry, and at the same time his hand should be trained by animal dissection." In addition to his school, college and hospital training, he should have several years' experience as a general practitioner, as the importance of correct diagnosis in surgery cannot be overestimated. This is true in veterinary surgery as well as in human practice. There is perhaps no better way to become familiar with pathology and morbid anatomy than in the general practice of medicine, particularly is this true if the autopsy is not neglected.

We are told that " Cleanliness is akin to Godliness." Surely nowhere is this more true than in surgery. Perfect cleanliness is so closely related to asepsis that the mentioning of one causes one to think of the other. If perfect asepsis is maintained throughout the operation and subsequent treatment, little short of destruction of vital organs is likely to produce death.

A great deal of truth is contained in the statement that " antiseptic surgery is largely a matter of habit." If a man is untidy and careless about his person, clothing and habits, when not engaged in operations, he will not be likely to make the radical changes necessary to be clean during such operations. If one fails to observe asepsis in minor things, he will scarcely be able to apply it to the major ones.

An uncontrolled temper is a great detriment to the veterinarian. Many things in the handling of animals tend to irritate and provoke outbursts of temper on the part of the surgeon. When not controlled these seriously interfere with subduing the animal, rendering the operator nervous and unfit for his task as well as displeasing all present.

Temperate habits are also essential. He who indulges in strong drink to excess should never be trusted with the surgeon's knife. Overindulgence in anything that tends to lower the vital forces soon undermines the health, wrecks the nervous system, and renders the individual unfit for any service, especially for a surgeon.

" The final making of the surgeon is of three parts; viz., first, experience; second, experience, and third, experience." Specialization in the practice of medicine and surgery is fast growing in popularity. The one who does the same thing over and over, day in and day out, year after year, must surely become more proficient than the one who only does it occasionally. The ideal can seldom or never be attained, but the nearer we approach to it the better.

Some operations require the cultivation of some one or more of the special senses, as, for example, the castration of the equine cryptorchid requires a well-developed sense of touch, which is at-

tained in a high degree only by frequently performing this operation. The clear thinker, who has had long and careful experience, preceded by sound education, bases his conclusion on the broadest possible knowledge and if he has developed a high degree of manual dexterity, he will come the nearest being our ideal surgeon.

The veterinarian should understand his legal as well as his moral obligations to his client. It is well to know what to do, but often better to know what not to do. Malpractice not only consists in doing the wrong thing, but often in neglecting to do the right thing. The surgeon is not responsible for a failure to cure if he follows the prescribed methods and uses reasonable precaution. Animals to be operated upon must be restrained and such efforts are always subject to accidents for which the operator is neither morally nor legally responsible if he has used reasonable care and precaution. New and untried methods in the practice of veterinary medicine and surgery should be tried carefully, remembering that not only one, but sometimes many tests are necessary to prove efficiency. It is in the use of the new methods that we often take the greatest risk. This might be due to a lack of familiarity with the thing or the method. Again, we might be liable for malpractice because we failed to use the comparatively new methods, provided they had been used enough in general practice to prove their worth.

To illustrate the surgeon's legal responsibility I will quote from the opinion of the Supreme Court of Colorado rendered in a case of surgery on the human kind that would seem to apply equally as well to veterinary practice.

" In the absence of a special contract the law implies that the surgeon employed to treat an injury contracts with his patient (client) :

> " First—That he possesses that reasonable degree of learning and skill which is ordinarily possessed by others of the profession.
>
> " Second—That he will use reasonable and ordinary care and diligence in the exercise of his skill and the appli-

cation of his knowledge to accomplish the purpose for which he is employed, and

"Third—That he will use his best judgment in the application of his skill in determining the nature of the injury and the best mode of treatment. He is not responsible for want of success unless it results from a failure to exercise ordinary care, or from want of ordinary skill. If he possesses ordinary skill and exercises ordinary care in applying it, he is not responsible for a mistake of judgment."

From the foregoing opinion it will be seen that the legal as well as moral requirements are not for impossible things, but rather than one possess all the knowledge and skill he claims to possess, that he use reasonable energy and diligence in applying the same to the end that he does his whole duty to his patient and his client, and honor to himself and his profession.

Dr. KAUPP LEAVES COLORADO—Dr. B. F. Kaupp severed his connection with the Colorado Agricultural College on November 1, and after a vacation of two weeks spent in Texas and Missouri, reported to the Abbott Alkaloidal Company in Chicago as per previous arrangement.

Dr. Kaupp's work will be that of research pathologist for the Abbott company, a work for which he is eminently qualified by training and experience.

Dr. Glover expresses regret in the loss of Dr. Kaupp, who has for over four years manifested a more than common zeal and devotion for his work in Colorado.

We congratulate the Abbott Alkaloidal Company in securing the services of Dr. Kaupp and we also congratulate Dr. Kaupp in that he is now enabled to devote his entire time to a work for which he is especially adapted.

Dr. I. E. NEWSON, who has been in charge of the department of anatomy at the Colorado Agricultural College for the past four years, has taken the place made vacant by the resignation of Dr. B. F. Kaupp. Dr. A. W. Whitehouse will have charge of Dr. Newson's classes for the balance of this year.

HOG CHOLERA IN MANITOBA.*

By C. D. McGilvray, M.D.V., Winnipeg, Canada.

The occurrence of hog cholera in urban and suburban districts in certain sections of Canada, and the non-appearance of the disease in the rural districts, has shown a striking connection between such outbreaks and the feeding of swine upon uncooked kitchen refuse and garbage and points strongly to such material being a medium conveying infection and starting fresh outbreaks.

In the province of Manitoba, with the conditions of which I am familiar, hog cholera has only made its appearance on rare occasions. Dunbar reported an outbreak which occurred in the vicinity of Winnipeg during 1886 and Stevenson an outbreak near Carman in 1899.

Since the latter time it has not made its appearance until August, 1911, when it was found to be in existence among pigs kept on premises in the district immediately surrounding the city of Winnipeg.

Almost simultaneously with the outbreak at Winnipeg, other outbreaks were reported in the vicinity of certain other urban centres in Western Canada.

Efforts were immediately directed toward the control and eradication of the disease from these districts and to ascertain and determine the source of infection.

Searching inquiry failed to bring forth any evidence or information as to the infection having been introduced by fresh hogs brought into such districts and no possible history was obtainable of the infection having been thus introduced.

A rather curious and striking feature was that on all premises upon which the disease first manifested itself, the hogs thereon were being fed upon uncooked swill, kitchen refuse and garbage

* Presented to the forty-ninth annual meeting of the American Veterinary Medical Association at Indianapolis, August, 1912.

obtained from hotels and restaurants. On other premises, in the same districts, where the hogs were not being fed upon kitchen refuse and garbage, the hogs were found to be healthy, and remained so unless, and until, becoming infected by either direct, or indirect contact, or intermediary means from premises where the disease had already manifested itself. In the latter cases information was obtainable that infection had been introduced by such means.

Dr. J. G. Rutherford, late Veterinary Director General for Canada, in his report for the year 1910 refers to the possibility of outbeaks of hog cholera being started in suburban districts among swine being fed on uncooked garbage. Our experience and observations in connection with outbreaks of the disease dealt with in Western Canada strongly indicates and supports the theory as to fresh outbreaks originating in many cases from such sources.

The outbreaks dealt with by us in the district surrounding the city of Winnipeg furnished strong circumstantial evidence in support of this theory, while other outbreaks subsequently dealt with at Kenora, Rainy River and Fort Frances in Western Ontario furnished even more striking illustration and convincing proof thereof.

In connection with the outbreak at Winnipeg, which was of a serious nature and of large extent, we found the disease to be in existence on 62 premises. In order to eradicate the disease it was necessary to slaughter 2,219 swine which were acutally diseased or had been in close contact with diseased pigs, during a period extending from September to December, inclusive.

During this time we also visited an additional 212 premises and inspected thereon 2,190 pigs, which were kept under close observation and inspected again at regular intervals covering a period of three months.

In the case of the outbreak at Kenora, it was reported to us, during October last, that some disease was causing serious losses among hogs on the premises of a Mr. H———. Upon investigation it was found that the owner of these hogs conducted a

hotel at Kenora and was feeding the swill and kitchen refuse from the hotel to hogs being kept on his farm premises some five miles distant.

The symptoms shown by these hogs, as well as post-mortem lesions, were characteristic of hog cholera. No fresh hogs had been introduced on the premises for over one year prior to the time of the outbreak and there was no apparent possibility of them having come into contact with any other hogs for a like period.

Hogs were also found to be affected on three other premises which were separate from each other by several miles, and upon which the swine were being fed uncooked swill or kitchen refuse obtained from the hotels in Kenora.

The disease manifested itself on these premises almost simultaneously, without any possibility of infection having been introduced, either by direct or intermediary means, or any other source determinable.

On further examination of all premises upon which hogs were being kept in the vicinity of Kenora, which were kept under observation and inspected at regular intervals, covering a period of over three months, it was found that the disease only existed on premises upon which the hogs were being fed uncooked kitchen refuse or garbage, or on premises where garbage fed hogs had been introduced.

Of the outbreak in Kenora, on four premises 146 garbage fed hogs were found to be affected. On two other premises, on which the disease was found to be in existence among 17 hogs, the source of infection was traceable to the introduction on to the premises of hogs which had been obtained from one of the parties whose hogs were being fed on hotel kitchen refuse. The hogs which were thus obtained were the first to show evidence of the disease and the history obtained was that the other hogs on the premises had been entirely healthy until the introduction of the hogs referred to.

Hogs were also inspected at 13 other premises in the district of Kenora, which had not been fed upon uncooked garbage and

were kept under close observation for a period of three months, and again subsequently inspected after a further period of six months and remained entirely healthy.

Needless to state during this period, due precautions were exercised to prevent any possible infection being introduced from any infected premises.

Our experiences in dealing with the outbreaks in districts surrounding the city of Winnipeg were similar to those at Kenora. The disease first manifested itself on premises on which the hogs were being fed uncooked kitchen refuse and garbage and then spread from such centres to other premises in the same district. The history in all cases was so convincing as not to be lightly overlooked.

During the month of July of the present year, outbreaks of hog cholera were reported as occurring at urban points in the Western portion of Ontario, at Fort Frances and Rainy River, and, upon investigation, some rather interesting features were observed.

A careful inspection was made of all premises in the districts upon which hogs were being kept. In all 82 premises were inspected with the following results:

On 59 premises, 345 hogs were inspected which were not being fed on uncooked swill or kitchen refuse. These were found to be healthy at time of examination and showed no evidence of disease.

On two premises, upon which the hogs were not being fed uncooked kitchen refuse, the disease was found to be in existence. In these two cases, however, history was obtainable of the infection having been introduced by animals obtained from other premises where hog cholera was detected.

On 21 premises we found that the hogs thereon were being fed uncooked swill and kitchen refuse obtained from hotels and restaurants. On 10 of these premises we found the disease to be in existence, 58 pigs were found to be affected, while 60 others had died a short time prior to inspection. On the remaining 11 premises, upon which were kept 77 hogs, the disease was not in evidence at the time of inspection.

It will, therefore, be seen that out of 21 premises upon which hogs were being fed uncooked kitchen refuse and garbage, cholera was found to be in existence on 10 of these, while on 61 premises, upon which hogs were not being fed such refuse and garbage, the disease was only found to be in existence upon two premises and, in each case, a history was obtainable of the infection having been introduced by hogs coming from premises upon which they were being fed garbage and the disease had manifested itself.

Close inquiry was made in connection with all of these outbreaks as to the possibility of the infection having been introduced by other hogs having been brought into the districts, but no information was available indicating such a source of infection.

The question might arise as to why the feeding of hogs upon uncooked kitchen refuse and garbage may give rise to the disease. In this connection it was invariably found by us that hotel refuse and kitchen garbage being fed to hogs contained quantities of pork products, especially pork cuttings and sausage.

In connection with our investigations as to the possible source of infection, we directed inquiry as to where many of the hotels and restaurants (from which was obtained the garbage being fed to hogs) had procured their supplies of pork products. As a result of our enquiries it was invariably found that these products were of a similar brand and origin, being obtained from the same firm which imports very large quantities of American pork products. It was also observed that coincident with the appearance of these outbreaks, large quantities of pork products were being imported by this firm. The distribution of these products to certain widely separated points was followed almost simultaneously, or in rapid succession thereafter, by outbreaks of the disease. It would, therefore, appear quite probable that the meats in question had been infected.

The disease appeared in both the acute and chronic types, and the symptoms and post-mortem lesions were characteristic of the disease. At the beginning of the outbreak the acute type was most in evidence and more marked in severity, becoming less so with the lapse of time. This no doubt depending upon the viru-

lence of type or strain of infection appearing to become weakened or attenuated with the lapse of time.

The characteristic symptoms in evidence were: Sluggishness, capricious appetite; gumming or adhesion of the eyelids; accelerated breathing, associated with cough in some cases; the appearance of reddened or purplish blotches on the skin, especially around the region of the ears and neck and the under surface of the abdomen and inner thighs. The bowels in some cases were constipated, while in others diarrhœa was present. Progressive weakness, uncertain gait, terminating in loss of power of the hind limbs, was frequently noticeable.

In the acute cases the animals rapidly succumbed to the diseases, hogs ranging from two to six months in age seemed to be more severely affected and more rapidly succumb than those older. In the chronic cases, as the course of the disease became prolonged, progressive weakness and emaciation supervened.

Post-mortem lesions were chiefly in evidence affecting the lymphatic glands, lungs, heart, kidneys, spleen and intestines. The lymphatic glands were usually observed to be markedly reddened and enlarged. The lungs showed many small ecchymosis and large pneumonic areas, dark red in color, consolidated, and sharply defined from the healthy lung. Ecchymosis was also observed on the heart surface. The kidneys were usually darker in color than normal and presented numerous petechia (turkey egg appearance). The spleen in many cases was greatly enlarged, although in a few cases, it appeared smaller than usual. Where the disease had been of short duration, as in acute cases, petechia and ecchymosis were noticed on the outer surface of the intestines and on the inner surface areas of the mucosæ often appeared congested, inflamed and more or less swollen.

In chronic cases somewhat similar lesions were observed as in acute cases, together with the characteristic ulceration of the intestines, noticeably around the region of the ileo-cæcal valve, as well also as thickening of the mucosæ in other parts of the intestines.

Reference has been made to a serious affection of swine other

than hog cholera, although simulating that disease, as a result of them being fed on kitchen refuse containing certain alkalies.

No doubt the feeding of such refuse containing certain alkalies may be harmful and the cause of serious affections and losses among pigs. However, any affection caused by such alkalies would not be of a contagious nature as was the case in the outbreaks herein referred to, which were essentially highly contagious and characteristic of hog cholera.

The result of our investigations and inquiries showed a close and striking connection between the existence of the disease and the nature of the feeding, furnishing very strong circumstantial evidence in support of the belief that many fresh outbreaks of hog cholera are started in urban and suburban districts by feeding hogs upon uncooked kitchen refuse and garbage containing infected pork or pork products.

BEGINNING WITH THE SESSION OF 1914-15 the entrance requirements at the School of Veterinary Medicine at the University of Pennsylvania will be two years of high school work, covering at least eight units as follows: English at least 2, algebra at least 2, history 1, other subjects 3. Candidates for admission who cannot present high school certificates will be required to pass examinations in English, algebra, history, physics and one language, French, German or Latin.

DR. MCGILVRAY RECEIVES APPOINTMENT.—We learn from the *Farmers' Advocate and Home Journal,* Winnipeg, that Dr. C. D. McGilvray has been appointed to succeed Dr. Fred Torrance as head of the Veterinary Science Department of Manitoba Agricultural College. Born in Glasgow, Scotland, he came to Canada in his boyhood days. His veterinary training was received at Toronto, with a post-graduate course at Chicago. He has been in the Canadian West for 26 years, having practised in the Binscarth district before taking the position of representative of the Dominion Veterinary Branch at Winnipeg in 1905. Being acquainted with the West and having a thorough knowledge of all branches of veterinary work, he is a good successor to Dr. Torrance, now Veterinary Director-General at Ottawa.

STIFLE LAMENESS.*

By David W. Cochran, D.V.S., New York, N. Y.

Gentlemen. At the request of the chairman of the Committee on Practice (Dr. H. D. Gill), I have prepared a paper to be read and discussed at this meeting.

The subject which I have chosen is on lameness associated with pathological conditions of the femero-tibial-patella articulation, commonly called the stifle joint; the lameness being a symptom or manifestation of some physical lesion, either isolated or complicated, affecting one or several parts of this apparatus.

I know of no subject in veterinary literature of which there is so much diversity of opinion. It is a condition which presents many variations, due to its anatomical complexity. It is formed by the articular surfaces of three bones, forming two distinct joints, the femero-pattella, and the femero-tibial. They form an imperfect hinge joint, while the patella itself offers the greatest movement of any bone, in the whole body. This joint is strengthened through the medium of inter-articular meniscus, a fibro fatty cushion, inter-articular, and surrounding funicular ligaments, together with the insertion of tendons of muscles, surrounding the parts reinforcing these bands.

Diseases affecting this joint do not offer any classification, but for general purposes a division may be made as follows: 1. Dropsical, 2. Nervous, 3. Arthritic, 4. Traumatic, 5. Spasmodic, 6. To diseased conditions of Boney Structure.

Under the Division of Dropsical Conditions.—There is a hydrarthrosis or hydrops-Artisculorum. This is an effusion of a fluid into the joint; it exists without the symptoms of inflamatory process being present. It is in reality, however, associated with some structural change within the lining membrane of the joint. This articulation is supplied with three synovial capsules,

* Presented to the forty-ninth annual meeting of the American Veterinary Medical Association, at Indianapolis, August, 1912.

one to the femur and patella, and two others connecting the condyles of the femur and the facets of the tibia. The dilatation of these capsules forms a soft tumor. It rarely causes any lameness except when it assumes large proportions. Then there may be limited motion of the Stifle, or we may also have a *hygroma,* a serious bursa or cyst.

It is sometimes hard to differentiate between a pre-patela hygroma and a femero-tibial patela-hydrarthrosis, as both may exist together.

The *hygroma* may deform the parts, but seldom produces any lameness or inconvenience to the animal.

The Nervous Lesions.—That condition exists which may be pathognomonic, as well as the sequalæ of azotuma, where in one case we have it results in loss of power, and in the other an atrophy of muscles about the stifle joint, due to suspended innervation.

There is a great loss of function in which no treatment, whether external or internal seems to be of any benefit. Exercise of own volition by the animals at pasture gives favorable results.

The Arthritic Form.—Under this heading, I will mention gonlitis. This diseased condition is characterized by chronic inflammation, and by degenerative changes involving the structure of the articulation and resulting in rigidity and atrophy of the muscles attached from the external angle of the illeum to the femero-tibula-patella articulation.

The tensor vaginæ is very tense and rigid. The stifle is very prominent. This condition may be unilateral or bilateral. In the unilateral form, the horse stands with the limb flexed, does not care to support the body weight on it, stands with the pastern in extreme flexion, the anterior face of the foot rests on the ground surface, the plantar surface is exposed, he often holds his foot clear from the ground. This hoof is smaller than its fellow. There is a drying out of the foot, a closing in of its sides, the heels growing high, the shoe is well worn at the toe.

In the bilateral form, there is uneasiness in both legs, a con-

stant shifting from one foot to the other, the foot is alternately held free from the ground surface, the back arched, accompanied by atrophy of the muscles of the patela region. When started off his movements are short and stilty; the motion of the stifles are limited.

Horses affected with gonlitis are very hard horses to shoe. In the unilateral type, we start by shoeing the lame leg. The hoof is brought as near as possible to the shape of a normal foot. The foot is shod with a shoe elevated at the heel; the toe of the shoe is flat. The application of the shoe to the foot is accompanied with a leather sole, tar and oakum packing, to keep the foot moist and to prevent drying out. The trouble now commences when the foot of the sound leg is to be shod. The shoer will have to lift this leg with main strength and hold it. When he has it up from the ground surface, very often the horse will not stand on the lame leg. The whole weight of the horse is on the shoer's back, the lame leg is suspended in the air. If the shoer attempts to shift the weight, the horse will in most cases fall on the floor.

In the bilateral form, we have this trouble with both legs. The treatment of these cases are counter irritants, either vesicants setons or the actual cautery. Some horses get sound temporarily. Some not at all. Results are not always favorable.

In a post mortem of one of these cases, there was found blood stained synovia, partly coagulated. The cartilage of the patela was discolored, but smooth. The condyles and the trochlea were arthritic, with some eroseons and small exastoses, on the external condyle.

The Traumatic Form.—Traumatism is just as liable to this joint as any other in the horse. Sprains and wounds must appear occasionally. Here there may be a true luxation of the patella as the result of an injury due to accidental causes. The displacement of the patella may be the result of laceration of ligamentous structure, or an elongation of ligamentous structure. I have seen horses with elongated tendinous structure and at each step taken, there could be heard distinctly a clucking sound.

Another form of traumatism to which I would principally call your attention is rupture of the cord of the flexor-metatarsi. It has its origin at the inferior extremity of the femur in the fossa, excavated between the trochlea and the external condyle, and terminates in two branches. A large one lies in front and is attached to the superior portion of the principal metatarsus, the other deviates outward and is attached to the anterior surface of the cuboid bone.

This rupture is due to a violent effort on the part of the animal either to move a heavy load or to a powerful struggle to avoid a threatening fall. The symptoms are, the animal walks with difficulty, the leg hangs on the hock, and there is a buckling of the tendo achillis in extension, no flexion at the hock. In motion the leg is drawn upward and backward.

The rupture of the premetatarsal may take place at various points of its length. Sometimes at its femoral insertion or at its metatarsal insertion. When the rupture of the cord takes place in the tibial region, the ends immobilized by muscular layers between which they are enclosed, readily cicatrize. Where it takes place at the superior extremity, it is a more serious case; in order to effect a cure the parts must be made immobile. We must try to prevent motion in order to hasten cicatrization.

If an animal thus affected is forced to walk, the femero-metatarsal cord not transmitting to the canon bone the flexion of the femur, there is a loss of function. The canon bone is not flexed but hangs powerless. The phalangeal column hangs vertical. The tendo achillis, no longer subject to the counter action of the flexor muscles, is flabby and bent towards its insertion on the os calcis. There is a loss of co-ordination and the leg dangles from the hock, if compelled to move. When at rest the aspect is changed; no matter how serious the symptoms while walking, they now have changed. The leg which a moment ago was powerless, now participates in support of the body weight, with the foot solid on the ground surface.

Treatment.—Secure immobility, apply counter irritation at the superior and inferior extremity of the cord. Absolute rest. Prognosis favorable.

The Spasmodic Form.—Cramp, is defined as a spasmodic, tonic contraction of muscles. The etiology of cramp is obscure. There is much diversity of opinion as to the exact cause. It is generally admitted that it may result from muscular, nervous, or vascular lesions, although most of the observations reported in veterinary literature under the title of cramp relate to a "pseudo luxation of the patella." I have seen horses with cramp of the muscles of the anterior extremity.

The symptoms of pseudo luxation of the patella are shown when an attempt is made to back the horse from his stall. He refuses to budge. When forced to back, one foot seems fixed to the floor, the leg is rigid. If moved forward, the leg, still rigid, drags along behind its fellow on the anterior face of the hoof. The plantar surface is exposed and turned backward. All joints in this leg are flexed, except the hip. When compelled to walk in this condition, movement is accomplished with exertions and great distress. It occurs in the standing animal only, and can only be discovered when forced to move.

The Primary Lesion.—The location and the manner in which this articulation is so effectually locked, is a subject of much diversity of opinion.

Causes.—The causes of pseudo luxation of the patella are generally obscure. It often follows in horses that have been laid up on account of some debilitating disease. It comes as the sequelæ of a long rest. Some authorities contend there is a luxation outward, some inward, some contend that it is a fixation of the patella caused by cramp of the muscles, which are focused to the tendinous attachments to the patella. Others say that this dislocation is due to the anchoring of the patella upon the upper end of the internal hip of the femoral trochlea, the part being well fitted by its peculiar formation to prevent the patella from sliding back over the rim. It becomes fixed in its new position by the irregular and violent contraction of the muscles involved in the abnormal tension.

It seems impossible that such a state of rigidity can exist, as in some cases for a few hours, and in others for days, yet in

none of these cases do we ever find any inflammation as a sequelæ, or any pathological change, in any part of this joint.

Treatment.—If we agitate this animal with a whip or go through any manual procedure, either massage or pressing the patella in and out or up and down, by drawing the leg forward with a side line or by the application of a stimulating liniment along the course of the tendo achillis, the symptoms disappear. We never see it in a horse at work, no matter how hard the labor. Some practitioners resort to a surgical treatment, that of desotomy of the internal patella-tibial ligament, known as the *Bassi operation;* others to a resection of the Triceps Femoris at their lower border. Good results are recorded.

This surgical procedure seems to be the inverse of any physiological or mechanical theory. The patella normally lies above the condyles of the femur when the femero-tibula joint is extended; and during flexion, it lies in the inter-condyloid fossa, more on the external than upon the inner. If these surgical operations are right and give immediate results, what will be the results when these ligaments have again united?

Dr. W. L. Williams on this subject has shown with the aid of a mechanical appliance, by which the patella was made stationary above the internal lip of the trochlea, that we do not get extension backward, but extension forward.

Diseased Condition of the Bony Structure.—In young animals of rachitic diathesis, there is a tendency to luxation of the patella. A predisposing cause being softening of the bones from impaired nutrition, there is a spongoid condition resembling decalcified bone. The periosteum stretches very easily, it becomes thick and inflammatory due to strains of ligaments.

There are diseases of osseus structure in horses of advanced age, namely, that of osteomalacia, and osteoporosis. We have in these forms also strains of ligamentous structure on the periosteum, causing inflammation and swelling and elongation of tendons. These conditions are often confined to certain districts, and arise from malnutrition or bad hygienic surroundings. A change of diet and good hygienic conditions favor recovery.

In conclusion, I wish to give credit for many of the references in this paper to *Chaveau's Anatomy, Dr. Liautard's articles on lameness,* and also to the very elaborate papers on this subject by *Dr. W. L. Williams* and *Drs. L. A.* and *E. Merrillat,* which were published in the AMERICAN VETERINARY REVIEW.

"BEAT IOWA" was the slogan of the Iowa State College at Ames, referring to the football game that was to be played between that college and the Iowa State University, on the college campus at Ames, Saturday, November 16 last; and that the contest was waged purely in the spirit and for the purpose for which it was intended (*i. e.,* to stimulate athletic training), is evidenced by the sportsmanlike sentiments expressed in a letter from Mr. Crittenden Ross, student of the School of Veterinary Medicine, from which we have taken the liberty to quote without Mr. Ross' knowledge or consent, and trust we will be pardoned for doing so. Mr. Ross says: "The score was Iowa 20, Ames 7, after a hard fought battle. Our boys were not equal to the occasion; and, although it grieves us somewhat, I believe that Iowa earned the game." Those are manly sentiments, and we predict a "future" for their author, and to whatever heights he may attain, he will reach them by honorable methods and honest competition.

THE TENNESSEE VETERINARY MEDICAL ASSOCIATION held a most interesting meeting at Morrill Hall, University of Tennessee, Knoxville, Wednesday and Thursday, November 20-21. Among the interesting educational features was an illustrated lecture by Prof. E. C. Cotton, Assistant Entomologist of the Agricultural Experiment Station, on the "Life History of Southern Cattle Fever Tick" and "Sex Determination" by Prof. A. A. Schaefer, Assistant Professor of Zoology, University of Tennessee, also illustrated. The clinic at the hospital of Drs. Jacob and Shaw and the visit to the University Farm under the direction of Prof. C. A. Wilson, of the Animal Husbandry Branch, were very much appreciated.

AN ARTICLE ON EPIZOOTIC EQUINE ENCEPHALO-MYELITIS (Borna Disease) by Prof. C. H. Stange, Dean of Division of Veterinary Medicine, Iowa State College, will be published in our January issue.

THE VETERINARY SERVICE IN THE PHILIPPINES.*

By Archibald R. Ward, Chief Veterinarian, Bureau of Agriculture, Government of the Philippine Islands.

In the Review for January, 1912, on page 542, there appears a report of Special Committee on Insular Possessions (A.V.M.A.), signed by Dr. N. S. Mayo, Chairman. The same report is published in the Proceedings of the American Veterinary Medical Association for 1911, with my name along with those of other members of the Committee. Inasmuch as I am the only representative on the Committee from these Islands, it might well be inferred by the reader that I share responsibility for the opinions expressed. As a matter of fact I was not privileged to contribute to the report nor comment upon the same before publication.

The report emphasizes conditions in the Philippines, and I infer that it specifically deals with matters here, for I know of no other Insular Veterinary Service, outside of that in Hawaii, which consists of not over half a dozen veterinarians. In any event I shall comment upon the recommendations of the report so far as the proposed scheme would affect the largest Insular Veterinary Service in the possessions of the United States.

I dissent from the opinion that there is small inducement for entering the Insular Service here. The pay was described as not large. The Veterinary Division of the Bureau of Agriculture starts in men at $1,600 per annum, and there are twenty-three positions carrying this salary. Opportunities for promotions exist in the form of fifteen positions carrying $1,800, seven at $2,000, three at $2,250, two at $2,500, and one at $4,000.

Besides receiving half pay during the time consumed in traveling to the Philippine Islands, and reimbursement for traveling expenses en route, employees receive twenty-eight days a year

* This article was received in the Review office about the last week in April, 1912, and delay in publication until this time was entirely unintentional, it having gotten in some way mislaid at the time of its receipt and has just turned up.

for vacation or sick leave together with thirty days a year of accrued leave to be spent out of the Islands, all on full pay, and travel across the Pacific is not counted against this leave. Besides this, traveling expenses and subsistence are paid by the Government when men are away from official station, and it is safe to state that most of the men live at Government expense three-quarters of the time. The veterinarians of the Bureau of Agriculture receive on an average six hundred dollars a year reimbursement for travel, subsistence and lodging. The financial inducement for well-educated veterinarians to enter the service here is, in my estimation, liberal.

The Committee report states that "promotion is slow, and there is little of it." In this connection I have examined the records of promotion of all men in active service with the Veterinary Division of the Bureau of Agriculture on July 1, 1910, and since that date. During the period covered by the services of these men, two have advanced from $1,600 to $2,500 in an average period of two years and ten months, two to $2,250 in two years and seven months, nine to $2,000 in two years and three months, and eighteen to $1,800 in one year and nine months. Five have left the service after an average period of two years and three months without earning promotion. Fifteen men are serving at present at a salary of $1,600, and among these the eldest in the service has been in the employ of the Government for two years and ten months. Thirteen of these have served less than sixteen months.

Let us compare these conditions with those obtaining in other veterinary organizations with which we are all familiar. In the Bureau of Animal Industry a veterinarian is appointed at $1,400 a year. His residence may be New York, and he may be ordered to report at San Francisco, paying his own expenses, and his salary begins only when he reports for duty. The best that he can hope to do is to obtain an increase after two years' service, but, as a matter of fact, these promotions have been deferred for lack of funds. Employees receive fifteen days each of annual and sick leave on full pay.

Former Quartermaster's Department veterinarians have given me the following information: Veterinarians in the Quarmaster's Department of the Army are appointed at $1,200 per annum, with no allowances except when traveling, and there is no increase in pay nor retirement. Single men sometimes receive quarters, but this is not the rule. Commissary privilege with ten per cent. increase is allowed, but this is of little benefit to a single man.

Army veterinarians undoubtedly receive more salary and perquisites than those in the Philippine Civil Service. The disadvantages of the Army Veterinary Service have been put before the attention of the profession by writers more familiar with the facts than myself.

The statement is made that " the risks to life and health are considerably greater than in this country, and there is no retirement or pension if the ' grim destroyer ' fever ' gets ' you."

This is certainly an alarming condition if true. In connection with this matter I have scrutinized the annual report of the Bureau of Health for the Philippine Islands, for the year 1911, for verification of the assertions. This Bureau is directed by an officer of the United States Public Health and Marine Hospital Service, a fact that guarantees the authenticity of figures regarding health conditions here. I find that the death rate for Americans in the Government employ throughout the Islands is 8.87 per 1,000 for all causes, and the average age at death 32 years. The death rate in the states included in the registration area of the United States, is 16.4 per 1,000. The exceedingly low death rate in the Philippines is due to the fact that Americans in the Government employ are young men. The death rate, considering their age, is similar to that in temperate climates. I find that in Pennsylvania, in 1907, the death rate for ages 25 to 34 was 7.9 per 1,000, and in Liverpool, England, for 1909, for ages 30 to 40 was exactly the same. There is no justification afforded by mortality statistics or my personal observation to warrant alarming statements about any infections characterized by febrile symptoms, for I am not certain what disease is meant by the expression " the grim destroyer, fever."

With reference to petty local politics, I believe that the veterinarians in the Philippines are as free from this sort of influence as in similar work elsewhere. Live stock owners in the Philippines are as ready to protest against and evade quarantine as are stock owners in the United States. However, this attitude has no influence in restraining the Bureau of Agriculture from carrying out a policy considered appropriate for existing conditions.

The report recommends that the Insular veterinarians should belong to the Army, inasmuch as our Insular possessions are administered by the War Department. This reason might be advanced for placing in the United States Army Justices of the Supreme Court of the Philippine Islands or any other civil government employee.

The proposal to turn over the control of veterinary matters in our Insular possessions to the Army suggests a number of queries. Would Congress alter its policy of not spending money on the civil government here? At present the Philippines cost the United States nothing for civil administration, and any change would involve far-reaching consequences.

The report states "The members of this corps should be young men of strict integrity, high ideals, thoroughly trained in their profession and particularly in regard to tropical diseases of animals, and they should also have one modern language." Ignoring the inference that our present corps does not possess the desirable qualifications first enumerated above, I should like to know where in the United States there could be obtained men trained "particularly in regard to tropical diseases of animals" with or without a modern language. The Bureau of Agriculture of the Government of the Philippine Islands has trained "a few veterinarians in the long, hard school of experience to deal with tropical animal diseases in an intelligent manner." This has been necessary because no men so trained were to be had in the United States.

The establishment here of the College of Veterinary Science of the University of the Philippines will in time relieve the situa-

tion. The entrance requirements necessitate graduation from a Philippine high school requiring four years of work, and the veterinary curriculum embraces five years of nine months each. This standard is equivalent to requiring an American high school education and four years of veterinary instruction for graduation.

The proposal to link with an invading Army organization a veterinary corps for the protection of the live stock of the occupied country is an altruistic conception quite beyond the present stage of the usages of war. As a matter of fact, the protection of live stock can receive attention only after pacification.

The duties of the members of this corps are described as that of "protection of the Army horses and also the live stock of the occupied country." This is a rather ambitious program. If he is an Army veterinarian, how can he remain and give the country the benefit of his expert services "after the need for an Army has passed?"

What reason is there for the assumption that there is no definite central supervision at present, and what basis is there for the belief that this would be improved under the Army? Certainly the status of the Army veterinarians today does not warrant it. By their own testimony, a chief veterinarian is one of their imperative needs as a means for putting "the Army veterinary service on a professional, effective and economic basis."

The desirability of a tour of service at home is suggested. How would these men be employed? There are positions for forty-four of them now in the employ of the Government of the Philippine Islands, more than in the Army. The accrued leave system in force here at present abundantly provides for extended vacation at home.

The report shows that it was prepared without the advantage of all of the sources of information available and probably at the eleventh hour.

COMMITTEE MEETING fiftieth anniversary, A. V. M. A., was held November 30.

NEW YORK'S EQUINE PLAGUE.*

By Louis Griessman, D.V.S., New York, N. Y.

In reading the Old Testament one will come across texts on disease, and among them is mentioned glanders. This disease, in the days before Christ, is described in Hebrew as Saüs Hötem Luöfen, translated, means horse with a discharge from the nose. Abraham, who was the possessor of numerous live stock, mentions the death of horses by this form of plague.

In the fourth century, Apsyrtus describes one form of glanders (Farcy) as Elephantiasis. And in the fifth century, Vegetius mentions this disease, until we get to the thirteenth century, when Rufus gives a fair history and some symptoms. In the fifteenth century Ruini also writes about glanders, and in the sixteenth century a quaint old German by the name of Winter Von Adler Flugel had a queer idea concerning this disease. His idea was that there were two forms "white" or "stone glanders," which, in his opinion, was curable, and "yellow," which gave forth an offensive odor and incurable.

From the sixteenth to the eighteenth century numerous writers and investigators wrote on this subject, and in the nineteenth century Schutz and Loeffler, who investigated glanders, found the *bacterium mallei.*

Nature of the Disease.—In the strict sense of the word it is a contagious disease, and it is necessary that both the profession as well as the public have an exact idea of its character, under what conditions it exists, the source of infection, its spread, and most important, the sanitation and prevention. A contagious disease is one which finds its origin within the organism of a given animal species, and extends from such an infected animal to other animals of the same species, or to animals of other species which possess more or less susceptibility to infection.

* Presented to the Veterinary Medical Association of New York City, at its November, 1912, meeting.

Glanders occurs in the horse, ass, mule, and is transmissible to man and all domestic animals, except the cow; still sheep and goats have been found to be infected where they were kept in the same stable with diseased horses. The disease has been produced by inoculation in dogs, cats, prairie-dogs, white bears, lions, mice, guinea-pigs and rabbits.

Glanders may be spoken of as acute or chronic, according to the seat of same, as nasal, pulmonary, cutaneous and lymphatic. Acute glanders may terminate in fifteen days, while the chronic form may continue for years. Dieckerhoff reports a case which existed for a period of seven years. The chronic or latent form of glanders, in my opinion, is more dangerous, while in acute glanders it is very often recognized by the horse owner and is clearly manifested.

Manner of Infection.—May be directly or indirectly, by means of harness, blankets, watering pails, fodder, stable flies, wounds, digestive tract or respiration. The last two are the most frequent ways of infection, and we must bear in mind the great public nuisance—the watering trough. This nuisance by all means should be abolished and some sanitary method advocated in its stead. The return to the old water pump would be better, where each driver would use his own pail. It is a known fact that the glander bacilli is found in the dirty watering trough, due to the infecting nasal discharge from glandered horses, while the activity of the germ can be retained for a period of one to three weeks.

This disease is common among horses that are kept in narrow, damp, ill-ventilated stalls in basements or cellars, yet is found to occur in the best hygienic stables; also in old wooden shanties, where the walls are saturated and no sewer connection. All these conditions do not help to prevent the disease, but increase same. Proper legislation would be the means of abolishing these infected cellar stables.

It is a known bacteriological fact that the bacilli dried for three months or longer may retain its biological activities, becoming reactivated in the presence of its necessary pabulum.

The impression on man's mind of the contagion was first set in the seventeenth century by Solleysel. In 1734 Gaspard Saumer gave strict regulation as to the disinfection of stables wherein glanders existed, such as the burning of cribs and racks, the removal of the plaster, etc. Seven years later Gersault first suggested the immediate slaughter of the diseased horses and the isolation of suspicious cases; and in this era we find that horses are permitted to live for days before slaughter, due to some sort of delay on account of State laws, in effecting the condemnation by the State, the appraisal, and then the slaughter. All this could be done in a single day. Often horses have died while waiting for the appraiser to appear on the scene and, gentlemen, these last remarks are in reference particularly to clinical cases where there is no question as to diagnosis.

In this respect a branch office could be established in a large cosmopolitan city of this kind, with a deputy commissioner with full powers or some other person in his stead to hasten or expedite the disposal of these cases.

We have in this State about 600,000 horses or more, about one million cows and a million of dogs. By proper legislation a yearly tax of one dollar for each horse, fifty cents for a cow, and one dollar for a dog could be fixed on the individual owners, and each year the State would have this additional income for a fund, which approximately would be $2,500,000, and the same turned over to a live stock sanitary department and systematically testing and registering each horse and cow, and licensing and enforcing the muzzling of dogs; to give certificates of health on the horse and cow, also taking into consideration the public health as to the food it eats, the milk it drinks, and doing away with rabies at the same time. Under this system the sale of the horse could not be consummated without a certificate of health. This live stock sanitary bureau could investigate, indemnify the owner for his loss, and institute proper means for the eradication of glanders, going from one end of the State to the other.

The cases of reported recovery of glandered horses, if any, are so few and the probability of a cure so questionable we must take into consideration a possible error in diagnosis.

With preventative inoculation as a cure by means of vaccine, it is my opinion that it cannot be properly done by mitigated cultures artificially grown of the specific bacilli, and in order to get a specific vaccine, experiments should be carried out in some other animal less susceptible, in which it does not prove fatal, where we might get a given virulence, and still producing a protective form; this probable method on the same lines and theory of Jenner in Variola.

Improper stable management I believe, to be one of the most prolific causes of this contagion. A continuous supply of fresh air is always necessary for the maintenance of life. The stable of the gentleman is lofty and roomy, the horse is not crowded and here the disease is not so often found as in the case of the horse dealer where almost daily a different horse is put into the same stall. The danger from exposure to infection can scarcely be avoided by those horses that travel a great deal and put up over night in a transient stable, where often nightly a different horse has been stalled.

It is remarkable how some horse owners seem to dread the law when they are informed by their veterinarian that one of their horses is suffering with glanders, and the same must be reported to the proper health authorities. Also we hear and receive the abandoned glandered horses on the highways where they are left during the night by the owner or his agent, who has no regard for the law.

Ventilation and cleanliness of stables must stand side by side, proper sewerage and drainage and the daily removal of the manure.

I have submitted several questions to myself. What is to be done with the so-called sleeper or carrier that looks too good to be slaughtered? Is he not detrimental to the other horse in the same stable? Some of these under present conditions are permitted to live and work under a provisional quarantine. Is this quarantine enforced, in which instructions have been given to water separate and keep him isolated from the other horses? This quarantine from my observation is good in theory, but in

reality not faithfully performed. An instance—a huxter, or one-horse expressman or liveryman, who permits anyone to drive the animal on the public streets; let us follow him, and in the course of the day's work what happens; when on the road, the animal is dry and must be watered. The first saloon in front of which there is a watering trough the driver stops, as such troughs are placed there as an inducement for the driver to stop to water the animal, and at the same time for the driver to replenish his thirst with some liquid stronger than water. In this instance there is no proper quarantine.

But what do we know of glanders that exists in our stables in hundreds of instances that kills the poor working horse as well as the millionaire's trotter, that though it progresses slowly nevertheless kills, these are facts, and what are we to do to overcome them.

In conclusion I would make a plea for co-operation between the veterinarians of the Department of Agriculture, those of the Health Department with the attending veterinarian, so as to avoid false impressions in the minds of the owner.

That the destruction of glandered horses should not be permitted on the public highway by means of the bullet, but be destroyed by some other means in a bloodless manner. The reason is obvious for such reform.

Your slaughtering of one infected animal here and there is not going to stop the spread of this contagion. Early recognition, the co-operation of State and city authorities, and the disposal of these infecting animals, who to date have not responded to modern scientific treatment, appeals to me to be the rational of judgment.

MISSOURI VALLEY VETERINARY ASSOCIATION will hold its big winter meeting in Kansas City towards the end of January, and will be well attended. Tentatively the dates are January 22, 23, 24, 1913. A final announcement will be made in our next number, and the dates above either confirmed or corrected.

MY EXPERIENCE WITH ANTI-HOG CHOLERA SERUM.*

By F. M. Starr, D.V.M., Odessa, Mo.

Hog cholera appeared as an epidemic throughout Missouri during the season of 1911, which was a very dry one, and the disease is supposed to be brought on from the drying up of stagnant pools of water. The disease is still with us in an endemic form, but has lost its virulence to a great extent since its first appearance.

The loss in dollars cannot be estimated, as the death loss is not the greatest, for as soon as hogs became sick they were immediately pushed off to market, pigs from thirty pounds up to all the brood sows were sold at a sacrifice. Hogs for home consumption were almost unattainable, and many a poor renter went without his winter's meat. All hogs marketed were poor and not fit for market, which meant a great loss. Some think the faulty corn was the cause of the disease, but the disease appeared many months before the crop was matured. There is some dispute as to the nature of the disease. My experience has led me to think it genuine hog cholera, but symptoms in various herds differ, and in referring to our best authors it is hard to make a differentiation.

My experience with anti-hog cholera serum for its treatment has been excellent in most cases, which helps to make a diagnosis, as we would not get the results if it was not hog cholera. When a serum is made from the sick hogs of our own country it is the only way we can expect to get a serum that is adapted to offset the infection which our hogs are carrying, and if we get results the serum should have the credit. Without its use the loss was from 80 to 90 per cent.

One bunch of hogs I especially remember for its virulency was a bunch of fifty shoats which averaged about seventy-five

* Presented to the Missouri Veterinary Medical Association at Marshall, July, 1912.

pounds, which I was called to see. They were so badly infected I decided to let them alone and in three weeks every one of the fifty shoats had died, which was a fatality of 100 per cent. This same client had one hundred and seven head on an adjoining farm which was also infected. We gave them the simultaneous method and lost twenty-five head out of the hundred and seven, also some hogs had died before the treatment and some of the worst infected ones we did not vaccinate, so we had a loss of less than 25 per cent., which looks better than 100 per cent.

Owing to the expense of the serum it is hard to get the best results, as no client that I have had will stand for the double dosage of the serum. The proper way to get results in an infected herd (and in only one herd have I had this pleasure, and without any loss) is to give the serum treatment and in twenty days give the simultaneous treatment. This is for an infected herd. It looks imprudent to use the simultaneous treatment on an infected herd, but I would rather have my loss at the beginning and all at once, than to have them reinfected in four or five weeks and begin to die, which gives you a dissatisfied client who gives serum a black eye, of which I have had such experience.

I do not think sanitary police measures will give results as stock hogs are allowed to roam over a farm, so a sanitary plot of ground would be hard to obtain and if so the hogs could be infected by its being carried by attendants, dogs, birds, crows and pigeons. The use of serum is just in its infancy and a great deal is to be learned about its use, some is more potent than others, so dose may be too small. The physicians are getting better results from the use of diphtheritic serum, as they use it immediately upon diagnosis and in larger doses than when they first commenced its use. The longer we wait to use a serum the less chance we have to counteract the fast forming toxins. Hogs with a temperature not higher than 104° Fahrenheit I have had good success with the simultaneous treatment by cutting my doses of virulent blood to half the amount, and I find if hogs eat shelled corn they are fit subjects to vaccinate. I have no success

in treating sick hogs with serum, but find it prolongs their life three or four weeks. But I have had some success with sulpho-carbolate compound tablets used in all drinking water and slop. Farmers will vaccinate only when they have the disease in their own herd, or their neighbors, which does not give the simultaneous method a fair test. When hogs are once vaccinated the spring pigs should be also vaccinated at the time when the last that were farrowed have reached about the weight of fifteen pounds. This method will always be cheaper as the dose will always be smaller, and if all farmers would keep up this method for a few years the disease might be eradicated.

When you vaccinate a client's hogs, vaccinate all or none at all, as the unvaccinated hogs may contract the disease if not isolated. Where sows are with pigs, do not use the simultaneous method as they will abort, and if sow is suckling pigs, just use serum. If pigs are vaccinated and sow also with the simultaneous method. I know the milk contains some virus which with the virus from vaccination is too much for the pigs and causes their death and sow dries up in her milk. I know this is not from the want of milk, as I have had pigs that were eating well and large enough to wean, die. The sow should receive the serum alone, which does not affect the milk. Hogs after vaccination should be fed very little and, better still, let them have nothing but grass during fever stage. I have noticed some reactions from vaccination that shows that serum is not of the same potency, some vaccinated bunches will show no reaction whatever from its use, while others will look as though they were having the genuine disease, eyes full of a sticky discharge, cough, weakness of posterior extremities; they lie back in their beds, eat very little, but in fifteen or twenty days come out in good condition. The reaction is so intense it is not pleasant for the practitioner as the client has to be kept pacified.

On November the thirteenth I vaccinated ninety head of shoats in which I had very discouraging results as you will see by my chart, hogs appeared healthy, and to be certain I took several temperatures, which were normal. In ten days the hogs took a

SIMULTANEOUS.

Date.	Name.	No.	Infected.	Loss.
Nov. 9, 1911.	Geo. Havener	40	No (sold)	0
Nov. 9, 1911.	O'Filler	60	Yes	30
Nov. 10, 1911.	Jno. Keith	72	No	28
Nov. 11, 1911.	Will Johnson	9	Yes	2
Nov. 13, 1911.	I. Bedsand	90	No	36
Nov. 14, 1911.	W. Johnson	73	Yes	25
Nov. 14, 1911.	P. Brannock	43	Yes	20
Nov. 15, 1911.	L. X. Anderson	24	Yes	5
Nov. 15, 1911.	H. B. Smith	21	Yes	3
Nov. 15, 1911.	Geo. W. Smith	46	Yes	4
Nov. 17, 1911.	Lewis Johnson	105	No	5
Nov. 18, 1911.	L. Anderson	21	No	0
Nov. 27, 1911.	J. C. Cobb	16	No	1
Feb. 24, 1912.	A. O. White	62	Yes	18
Apr. 11, 1912.	J. Dennis	13	Yes	0
May 14, 1912.	Tanner Bros.	42	No	0
June 21, 1912.	J. Sanders	116	No	0
July 6, 1912.	A. T. Robinson	48	No	0
July 10, 1912.	Shons & Wakeman	34	Yes	0
	Totals	1,750		256

Percentage of loss ..... 17 2-5.

SIMPLE TREATMENT.

Date.	Name.	No.	Infected.	Loss.
July 10, 1910.	O. T. Hook	60	Yes	20
July 12, 1910.	W. Lunn	15	Yes	6
Sept. 18, 1911.	R. F. Slusher	42	Yes	10
Sept. 19, 1911.	Al Barnett	13	Yes	7
Sept. 21, 1911.	Eagan & Gam	20	No	0
Sept. 26, 1911.	W. Lewis	27	No	0
Oct. 10, 1911.	T. Lale	12	No	0
Oct. 12, 1911.	Lowery Doty	34	No	12
Dec. 12, 1911.	H. Leise	56	Yes	35
Jan. 5, 1912.	T. J. Slack	17	Yes	1
Jan. 31, 1912.	P. Anderson	12	No	0
Jan. 31, 1912.	W. Drake	34	Yes	20
Jan. 24, 1912.	A. Beal	80	Yes	10
Jan. 25, 1912.	P. Anderson	6	No	0
Apr. 11, 1912.	Jem Dennis	13	Yes	0
	Totals	441		125

Percentage of loss ..... 28.

SIMULTANEOUS.

Date.	Name.	No.	Infected.	Loss.
Oct. 2, 1911.	Pearcy & Sox	131	No	3
Oct. 9, 1911.	D. Vamer	20	No (sold)	0
Oct. 16, 1911.	A. T. Robinson	60	Yes	3
Oct. 27, 1911.	K. Tracey	150	Yes	5
Nov. 1, 1911.	A. Laughlin	82	Yes	30
Nov. 1, 1911.	J. Vanneter	26	No	0
Nov. 3, 1911.	Tanner Bros.	68	Yes	0
Nov. 4, 1911.	L. Doty	83	No	0
Nov. 6, 1911.	Marterson Bros.	66	No	0
Nov. 7, 1911.	J. Vanneter	12	No	0
Nov. 7, 1911.	J. Dasher	34	Yes	8
Nov. 7, 1911.	J. C. Cobb	17	No	0
Nov. 9, 1911.	H. Huppman	66	Yes	30

peculiar disease which I think was septicemia. They became blind, bled at nostrils, foamed at the mouth, became paralyzed, had convulsions and skin was bluish purple over entire body. The hogs lived but a few hours, thirty-six died out of the ninety. I believe that serum must have been infected.

In vaccinating I think we should disinfect parts where needle is introduced, wash parts clean with cotton, when dirty throw away and take a clean piece. Do not puncture more than once if possible, and if hog moves so that needle has to be withdrawn, change to a new field, do not puncture in the same location. I have had very little trouble from infection at point of injection. I always pinch the skin when I withdrew my needle so there is no escape of serum or virulent blood, then wipe off with antiseptic. If client has a dipping tank I like to run the hogs through the tank as fast as they are vaccinated, if the weather is warm.

November 14th I was called to vaccinate seventy-five head, found them all sick. We picked out twenty-four of the best looking ones, their temperature ranged up to 104 degrees Fahrenheit. We vaccinated them with simultaneous treatment and lost five out of the twenty-four. We used Hog Cholera Specific on the remaining fifty-one and lost every one. We were very sorry we did not use the double method on all, and more than likely have saved 25 per cent. of them.

December 12th I administered serum to fifty-six head, of which twenty head were sick. One old sow, which appeared healthy at time of treatment, died in two days, there was no swelling at point of injection and all of the well hogs showed a decided reaction from the serum. I lost thirty-four out of the fifty-six.

October 12th I gave the simple treatment to thirty-four head which were not infected. In ten days after the vaccination the owner placed two in a neighbor's pen of sick hogs and in about fifteen days they contracted the disease and died of cholera. He does not have much faith in the single treatment, but thinks the simultaneous treatment is a success if there is no cholera among hogs. I have since vaccinated seventy-five head for him with no loss.

I feel I have good success with the use of the simultaneous treatment when it was used during the greatest epidemic our part of the country has ever had. If serum is properly used, and the virulent blood very cautiously used and properly destroyed when left over, and especially kept out of the hands of the laity, such an epidemic as we have just experienced should never occur with such great loss. In my part of the country every liveryman, auctioneer and castrator were all over the country using the simultaneous treatment, which is ridiculous to think of.

Thus I have given you a few of my experiences in the use by the serum and simultaneous method of 2,191 head with a loss of 381 head, when cholera was raging in the form of an epidemic.

HIGH HONOR FOR A DISTINGUISHED VETERINARIAN.—The following, clipped from one of the British dailies by the senior editor, will be of interest to the many readers of the REVIEW who had the pleasure of meeting Professor Hobday on the occasion of his visit to America in 1911: "Veterinary Surgeon to the King—Master of the Horse's Office, Royal Mews, Buckingham Palace, October 30. The King has been graciously pleased to appoint Mr. Frederick Hobday, F.R.C.V.S., to be an Honorary Veterinary Surgeon to his Majesty."

SERUM THERAPY BY THE SIMULTANEOUS METHOD FOR THE PREVENTION OF HOG CHOLERA.*

By E. A. Buxton, D.V.S., Vinton, Iowa.

Never in the history of Iowa was the farmers great industry of hog raising threatened with such complete destruction as at the present time. I think the monetary loss in the hog industry alone from cholera in this State far exceeds all other diseases of the lower animals combined. A fair estimate of the loss of hogs from cholera, their feed and care in the last year would approximate a loss of fifteen million dollars to the farmers of this State. This condition is not confined to Iowa alone, but nearly all of the corn-raising States of the Union are likewise affected. It is this great monetary loss to our clients, the farmers and swine raisers, that has prompted me to bring the subject of serum therapy before the veterinarians here assembled that we might by careful study and discussion be better enabled to demonstrate to the thinking swine raisers of our State, who have spent years in building up a fine herd of hogs, that it is unnecessary for them to lose the results of all of their work and care in a single week, but that by immunizing their hogs while well they can be able to save them and thus save great loss.

In bringing this subject briefly before you I can only give my experience in the last eight months with hog cholera serum. It must be conceded that the most scientific method used for the permanent prevention of hog cholera is the serum simultaneous method. It can not be claimed that this method is always sure. It has some drawbacks. One of these is the apparent susceptibility of some herds to inoculation. This danger wherever found is among weak, poorly cared for and unthrifty hogs. The main consideration in these experiments is one of virulence. It is a well-known fact that we have found virus of a high virulence

* Presented to the twenty-fifth annual meeting of the Iowa Veterinary Medical Association at Ames, November 12, 1912.

that will give positive results. On the other hand, virus of a low virulence will give sometimes slight results and even no results at all. The most exhaustive and careful experiments conducted with close observation has served only to show that by using good potent serum and a virus from hogs in acute stages of cholera with the temperature of 107 degrees or higher that there was no question of positive results, while the per cent. of loss in healthy herds may be a little greater, the results will be far more satisfactory, as the hogs will be rendered immune during their natural lives. I think the use of weak virus accounts for so many failures to produce permanent immunity and is the chief cause of many outbreaks of cholera in two or three months after treatment. After giving the serum therapy many years of careful study, I decided the simultaneous method for the prevention of hog cholera was the most feasable and beneficial method. In order to get the swine raisers interested in that method, I made public demonstrations to test the efficiency of hog cholera serum. I invited the public to witness these demonstrations. I immunized healthy hogs by the simultaneous method, placing them in infected pens where sick hogs had been kept and died and post-mortems held, I then injected virulent cholera blood into healthy hogs to make them sick, put them together with sick cholera hogs in the pens with the immunized hogs, subjected them to the most severe tests possible. As fast as a hog which had not been treated died, I permitted the immunized hogs to eat up the deceased ones and never experienced a loss by death of a single immunized hog. I have found in my experience during the last eight months, covering the treatment of seventeen thousand hogs, that during the extreme hot weather the per cent. of loss of hogs that had been exposed three days before being immunized was much greater than in cooler weather.

I have several herds of hogs that were immunized early in the spring and that I have been in repeatedly during the season vaccinating the pigs that were farrowed at different intervals, where little pigs that were treated early were less than three days old. I have several hogs that after being vaccinated for

months have been put in infected herds throughout the country that had cholera in the worst form. I have herds where dead cholera hogs were fed to immunized hogs that were vaccinated months before and in none of the above cases have I had a loss of a single hog from cholera in any of the experiments made.

What I desire to show by the foregoing illustrations is that the immune is permanent. That if it was not permanent the above illustrations would show deaths from cholera.

It is by these numerous demonstrations held in different parts of my own country that I have satisfied myself and convinced all interested persons in the swine industry that their hogs were permanently immune. In my experience in immunizing hogs for over two hundred different farmers in Benton County I am pleased to here state that there has not been one outbreak of cholera in any of the herds where the simultaneous method was used and the hogs recovered from the treatment, although many have been exposed in different places during the past eight months.

It is my profound conviction that by using a potent serum manufactured from virulent virus, produced from hogs with cholera in the acute stages of the disease, together with a good strong virus in the simultaneous treatment, we will have all the therapeutic action in producing immunity that the founders of the serum claim for it.

Not only investigating men of our profession but the owners of hogs are beginning to realize that the time to treat hogs is while they are healthy. If so treated the percentage of loss in a healthy herd rarely exceeds 3 per cent.

I need not call your atention to the large percentage of destruction in hogs when cholera gets a grip on them.

FLASHED UPON THE CANVAS DURING PROF. CHITTICK'S TALK AT THE AMES BANQUET.—"Sunshine is nature's disinfectant. Sanitary instruction is more important than sanitary legislation."

REPORTS OF CASES.

FOURTEEN CASES TREATED WITH PHYLACOGENS.

By F. N. SAWYER, M.D.C., Bakersfield, Cal.

Case 1—Subject, chestnut colt, five months old; first seen October 2, 1909. Temp. 104.8, pulse 60, resp. 26; was running at the nose, had some laryngitis and slight swelling of the glands of the neck. Colt was very quiet and off feed for three days. Diagnosis, distemper.

October 2, 1909, gave 10 c.c. mixed infection distemper phylacogen subcutaneously.

October 3, 1909, large swelling at site of injection, less running of the nose, glands less swollen. Nine a. m., temp. 101.6, pulse 45, resp. 18. Colt seems brighter, has taken some feed. Gave 10 c.c. mixed infection distemper phylacogen subcutaneously.

October 4, 1909, 9 a. m., temp. 100.2, pulse 40, resp. 18. Colt is bright and lively, no running at the nose, glandular swelling all gone, visible membranes normal, colt feeding naturally.

October 5, 1909, 8 a. m., temp., pulse and resp. normal. Twelve noon colt discharged.

Case 2—Subject, a brown colt, seven months old; first seen February 10, 1910. Temp. 105, pulse 55, resp. 24; running of the nose and eyes, laryngitis with some cough, glands of the neck much swollen, visible membranes very red; quiet and listless and off feed for the past four days. Diagnosis, distemper.

February 10, 1910, gave 10 c.c. mixed infection distemper phylacogen subcutaneously.

February 11, 1910, 10 a. m., temp. 102.5, pulse 50, resp. 22. Colt is brighter, visible membranes less red, less running of the nose, glandular swelling much less. Gave 15 c.c. mixed infection distemper phylacogen subcutaneously.

February 12, 1910, 10 a. m., temp. 100.2, pulse 40, resp. 18. Colt is lively and brighter, appetite good, visible membranes normal, glandular swelling all gone, no cough or running at the nose.

February 13, 1910, 10 a. m., temp., pulse and resp. normal. Colt discharged. Swellings moderate at the site of injections.

Case 3—Subject, chestnut colt, one year old; first seen April 9, 1910. Temp. 104.8, pulse 58, resp. 26; much running at the nose and eyes, laryngitis with cough, glands at the neck much swollen and indurated, visible membranes very red, quiet, listless and off feed for four days. Diagnosis, severe distemper.

April 9, 1910, gave 10 c.c. mixed infection distemper phylacogen subcutaneously.

April 10, 1910, 8 a. m., temp. 104.2, pulse 55, resp. 22, animal seems a little better. However, there is no improvement in the glandular swelling or color of the visible membranes and the animal is not eating. Gave 10 c.c. mixed infection distemper phylacogen subcutaneously.

April 11, 1910, 8 a. m., temp. 103.2, pulse 46, resp. 20. Two of the glands are soft and fluctuating, visible membranes less red, there is less cough and laryngitis. Incised the two soft glands and evacuated pus. Gave 20 c.c. mixed infection distemper phylacogen subcutaneously.

April 12, 1910, 8 a. m., temp. 101.2, pulse 40, resp. 18; colt is much brighter, appetite better, visible membranes very slightly red, the other glandular swellings nearly gone. Gave 30 c.c. mixed infection distemper phylacogen subcutaneously.

April 13, 1910, 9 a. m., temp. 100, pulse 38, resp. 18; colt lively and bright, appetite good, glandular swelling all gone, visible membranes normal, no dose.

April 14, 1910, 9 a. m., temp. 100, pulse 38, resp. 18, owner took the animal home.

Case 4—Subject, roan horse, four years old; ordinary draft. First seen April 20, 1911, temp. 104.6, pulse 60, resp. 30; visible membranes very red, eyes watery, laryngitis with cough; is constipated, has been quiet and off feed for three days. Diagnosis, influenza.

April 20, 1911, gave 15 c.c. pneumonia phylacogen intravenously, followed by moderate reaction in 10 minutes, during which the pulse was 70, resp. 36.

April 21, 1911, 7 a. m., temp. 102.4, pulse 50, resp. 24. Horse seems slightly improved, appetite poor, has no cough, visible membranes less red. Gave 15 c.c. pneumonia phylacogen intravenously. Seven p. m., temp. 101.4, pulse 50, resp. 22, is much brighter, running of the eyes nearly gone, visible membranes less red, is eating a little. Reaction from dose slight, pulse 60, resp. 32.

April 22, 1911, 7 a. m., temp. 101, pulse 45, resp. 20. Horse is much better, appetite good, visible membranes nearly normal,

no running of the nose or eyes. Gave 30 c.c. pneumonia phylacogen intravenously with moderate reaction, pulse 56, resp. 26; 7 p. m., temp. 100, pulse 40, resp. 19.

April 23, 1911, 9 a. m., temp. 100.2, pulse 38, resp. 18; 12 noon owner took the animal home.

Case 5—Subject, bay mare, six years old; light draft. First seen June 12, 1911, 10 a. m., temp. 104.6, pulse 62, resp. 30. Visible membranes much injected, slight running of the nose and eyes, laryngitis with some cough, tendency to purpuric swellings of the front legs, is constipated, has been off feed for four days. Diagnosis, influenza.

June 12, 1911, gave 15 c.c. pneumonia phylacogen intravenously, followed in 20 minutes by strong reaction, pulse 74, resp. 40, animal trembled, urinated and laid down; 7 p. m., temp. 103.6, pulse 55, resp. 26.

June 13, 1911, 8 a. m., temp. 102.6, pulse 50, resp. 22; seems slightly better, there is less running from the nose and is eating a little. Gave 15 c.c. pneumonia phylacogen intravenously, followed in 30 minutes by mild reaction.

June 14, 1911, 8 a. m., temp. 101.8, pulse 48, resp. 22. Is brighter, no running from the nose and eyes, appetite better, visible membranes less red. Gave 30 c.c. pneumonia phylacogen intravenously, followed in 20 minutes with strong reaction, pulse 64, resp. 30, animal trembled and laid down.

June 15, 1911, 8 a. m., temp. 100.2, pulse 40, resp. 18, is bright and lively, appetite good, visible membranes normal.

June 16, temp., pulse and resp. normal, 12 noon owner took the animal home.

Case 6—Subject, a gray horse, eight years old; ordinary draft. First seen June 20, 1911, temp. 104.2, pulse 58, resp. 28, visible membranes very red, animal is weak, running from nose, constipated, urine very red; has laryngitis with cough. Diagnosis, influenza, severe; prognosis, doubtful.

June 20, 1911, gave 10 c.c. pneumonia phylacogen intravenously, reaction moderate; 6 p. m., temp. 103.2, pulse 50, resp. 26. Animal seems less distressed, has had several large bowel movements. Gave 10 c.c. pneumonia phylacogen intravenously, reaction very slight.

June 21, 1911, 9 a. m., temp. 102.2, pulse 46, resp. 22. Horse is brighter, less running from the nose, less cough, urine clearer, animal is eating a little. Gave 15 c.c. pneumonia phylacogen intravenously, reaction moderate; 8 p. m., temp. 104, pulse 40,

resp. 20. Gave 15 c.c. pneumonia phylacogen intravenously, very slight reaction. Prognosis, favorable.

June 22, 1911, 7 a. m., temp. 101.2, pulse 38, resp. 20. Animal seems bright, running from the nose about gone, no laryngitis, no cough, appetite better, visible membranes nearly normal, urine is much clearer. Gave 30 c.c. pneumonia phylacogen intravenously, very strong reaction; 8 p. m., temp. 100.6, pulse 40, resp. 20, appetite better, bowel movement free, urine clearer.

June 23, 1911, 8 a. m., temp. 100.2, pulse 40, resp. 18. Animal is bright, appetite good, head and throat symptoms gone. Gave 30 c.c. pneumonia phylacogen intravenously, reaction moderate.

June 24, 1911, temp., pulse and resp. normal, 12 noon owner took the animal home.

Case 7—Subject, a blue roan mare, six years old, driving horse. First seen July 19, 1911, 10 a. m., temp. 102.8, pulse 54, resp. 22. Both front feet very painful and sore, horse hardly able to walk, constipated, off feed. Diagnosis, laminitis, first attack.

July 19, 1911, 11 a. m., 20 c.c. mixed infection phylacogen intravenously, reaction moderate.

July 20, 1911, 9 a. m., temp. 100.4, pulse 45, resp. 18. Less pain, is able to move around in stall with but slight evidence of pain. Has had three or four large bowel movements, is eating; 20 c.c. mixed infection phylacogen intravenously, reaction moderate.

July 21, 1911, 9 a. m., temp. 100, pulse 40, resp. 16. Animal moves around stall without pain, is bright, appetite good. No dose, orders rest for three days more.

July 24, 1911, owner drove horse.

October 5, 1912, horse had been working steadily, has had no further recurrence.

Case 8—Subject, brown stallion, eight years old, driving horse. First seen August 20, 1911, temp. 103, pulse 56, resp. 20. Both front feet very painful and tender, can hardly move for pain. Is constipated and off feed. Diagnosis, laminitis, first attack.

August 20, 1911, 12 noon, 20 c.c. mixed infection phylacogen intravenously, reaction moderate.

August 21, 1911, 8 a. m., temp. 100.2, pulse 44, resp. 18. Feet very much less painful, can move around in stall with slight evidence of pain. Is brighter and is eating some. Gave 20 c.c. mixed infection phylacogen intravenously, reaction mild.

August 22, 1911, 8 a. m., temp. 99.4, pulse 40, resp. 16. Moves around stall without pain. Rest for three days additional ordered, no dose. Animal is bright and is eating.

August 25, 1911, owner is driving horse.

November 1, 1912, has had no recurrence; has worked steadily since.

Case 9—Subject, black horse, four years old, draft type. First seen September 5, 1911, about 4 p. m., temp. 104.6, pulse 58, resp. 24. History, September 2, 1911, while turned out received a 6-inch barbed-wire cut just back of the right shoulder; September 4, 1911, pus began to accumulate and the adjacent soft parts were much swollen. Just back of the right shoulder is a deep cut from which considerable pus is draining, the soft parts are swollen and the swelling extends to the shoulder. The animal is having considerable pain and puts but little weight on the leg. Visible membranes red, appetite poor, animal is trembly and sweating. Diagnosis, severe infection of wire cut; prognosis, doubtful.

September 5, 1911, 4 p. m., incised lower corner of wound to insure good drainage, ordered 1 per cent. Kreso solution for antiseptic wash, gave 15 c.c. mixed infection phylacogen intravenously, reaction moderate.

September 6, 1911, 9 a. m., temp. 102.2, pulse 50, resp. 20. Has less pain, there is less swelling and discharge from the wound which is tinged with blood, is eating a little; gave 20 c.c. mixed infection phylacogen intravenously, reaction mild, Kreso solution continued. Prognosis, favorable.

September 7, 1911, 10 a. m., temp. 100.4, pulse 48, resp. 18. Free from pain, very little swelling of the soft parts, discharge much less, is thin, and serous, necrotic tissue sloughing off. Gave 30 c.c. mixed infection phylacogen intravenously, reaction moderate.

September 8, 1911, 9 a. m., temp. 100, pulse 44, resp. 16. No pain, no swelling, very little clear discharge from the wound which looks very healthy, ordered wound kept clean, needs no further treatment.

September 12, 1911, animal working.

Case 10—Bay mare, 10 years old, light draft. First seen September 20, 1911, temp. 103.8, pulse 60, resp. 26. History September 16, 1911, was kicked on the left flank. There was large swelling and bruising of the skin with considerable soreness. September 19, 1911, the swelling seemed very soft and the animal was sweaty and off feed. There is a large soft mass

10 inches across on the left flank; there is fluctuation, no appetite. Diagnosis, large abscess; prognosis, favorable.

September 20, 1911, made a 6-inch incision in the lower part of mass, evacuated a large quantity of pus. Washed out with 1 per cent. Kreso solution. Gave 20 c.c. mixed infection phylacogen intravenously, reaction moderate.

September 21, 1911, 9 a. m., temp. 100.8, pulse 45, resp. 20. Drainage from abscess, thin pus with blood and small in the amount, no pain, is eating. Gave 30 c.c. mixed infection phylacogen intravenously, reaction moderate. Kreso wash continued.

September 22, 1911, 10 a. m., temp. 99.6, pulse, 42, resp. 18. Discharge very scanty and serous. There is much sloughing of necrotic tissue, no pain, appetite good.

September 23, 1911, 9 a. m., thin clear discharge, wound looks healthy, ordered wound kept clean, needs no further attention.

September 25, 1911, animal working.

Case 11—Chestnut horse, six years old, driving. First seen October 8, 1911, temp. 104.2, pulse 58, resp. 26. History, October 4 or 5 while running in lot was snagged with a sharp stick on the right shoulder. It was swollen and sore, but didn't get bad until October 8. Found a puncture wound on the right shoulder about 3 inches deep. There is much green pus draining away, and the surrounding soft parts are much swollen, the animal is in pain, uneasy and perspiring, no appetite. Diagnosis, infected punctured wound, with septicaemia; prognosis, doubtful.

October 8, 1911, no incision necessary, washed out with 1 per cent. Kreso solution. Gave 20 c.c. mixed infection phylacogen intravenously, reaction moderate.

October 9, 1911, 9 a. m., temp. 101.8, pulse 48, resp. 20. Has only slight pain, discharge lighter in color with streaks of blood. Surrounding swelling much less, is eating a little. Gave 30 c.c. mixed infection phylacogen intravenously, reaction strong. Ordered Kreso wash continued.

October 10, 1911, 11 a. m., temp. 100.8, pulse 46, resp. 20. No pain, discharge more serous and much less in amount, very little swelling, appetite fair. Prognosis, favorable. Gave 30 c.c. mixed infection phylacogen intravenously, with moderate reaction.

October 11, 1911, 9 a. m., temp. 99.8, pulse 38, resp. 17. No pain, no swelling, discharge very scant, appetite good, Kreso continued.

October 12, 1911, temp., pulse and resp. normal. No dose, wound ordered kept clean.

October 16, animal at work.

Case 12—Gray horse, ten years old, large draft. First seen September 6, 1911, temp., pulse and resp. normal. History, since September, 1910, has been in poor condition, has been able to work most of the time but is thin, at times seems weak and always sweats easily, has lost weight in spite of good care, careful feeding and occasional short courses of tonic.

September 6, 1911, owner brought animal in for examination, I could find nothing wrong. Appetite fair, has occasional constipation or diarrhœa, but most of the time bowels are normal. Gave 15 c.c. mixed infection phylacogen, followed by moderate reaction in which the pulse was 56, resp. 24. Later in the day owner took animal home. I advised the owner to work the animal lightly for two or three days and to bring him back in seven to ten days if there was no improvement. At the end of two weeks the owner brought in two other animals in the same condition and said: "Inject these two, the other horse is doing fine."

Case 13—Black horse, seven years old, light draft. First seen October 10, 1911, temp. 103.4, pulse 55, resp. 24. Visible membranes red, is very weak, sweats easily, muscles of the back corded, urine scanty and quite red, bowels constipated. Diagnosis, azoturia; prognosis, fairly good.

October 10, 1911, gave 15 c.c. mixed infection phylacogen subcutaneously plus ½ grain arecoline.

October 11, 1911, 9 a. m., temp. 102.8, pulse 54, resp. 24. Horse is slightly better but continues weak and sweaty, appetite poor, is passing more urine. Gave 15 c.c. mixed infection phylacogen subcutaneously.

October 12, 7 a. m., temp. 102, pulse 50, resp. 20. Is a little more improved, back muscles less corded. There is less weakness of the loin and hip muscles, urine lighter colored and is passing more; is still sweaty. Gave 30 c.c. mixed infection phylacogen subcutaneously.

October 13, 1911, 8 a. m., temp. 100.6, pulse 44, resp. 20. Animal is much brighter, appetite is improved, is stronger. Cording of back muscles gone, urine and bowels normal. Gave 30 c.c. mixed infection phylacogen subcutaneously.

October 14, 1911, 9 a. m., temp. 100.2, pulse 40, resp. 16. Animal is bright and strong, appetite good.

October 16, 1911, animal discharged.

Case 14—A sorrel driving mare, seven years old. First seen January 15, 1912, temp. 102.6, pulse 50, resp. 20. Animal can hardly walk on account of pain in both front feet, both front

legs are very stiff and sore. Animal has a ring bone on the right hind foot (has had both these conditions for two years to my knowledge). Appetite poor, constipated. Diagnosis, navicular disease.

January 15, 1912, gave 15 c.c. pneumonia phylacogen subcutaneously.

January 16, 1912, 9 a. m., temp. 101, pulse 48, resp. 20. Animal seems about the same, is perhaps a little less stiff. Gave 15 c.c. pneumonia phylacogen subcutaneously.

January 17, 1912, 8 a. m., temp. 100.6, pulse 44, resp. 18. Is brighter, appetite improved, seems less sore, moves around a little in the stall. Gave 30 c.c. pneumonia phylacogen subcutaneously.

January 18, 1912, 9 a. m., temp. 100, pulse 40, resp. 16. Appetite good, can move about less stiffly, has surely less pain. Gave 30 c.c. pneumonia phylacogen subcutaneously.

January 19, 1912, 9 a. m., temp. 99.8, pulse 42, resp. 17. Animal is much improved, is less stiff, moves around in stall freely, both front feet still tender. Gave 30 c.c. pneumonia phylacogen subcutaneously.

January 20, 1912, temp. 99.8, pulse 40, resp. 16. Is bright, appetite good, can walk without pain, right front foot only slightly tender. Gave 30 c.c. pneumonia phylacogen subcutaneously.

January 21, 1912, temp. 100, pulse 38, resp. 16. Is still more improved. No tenderness in either front foot. Can walk without stiffness or lameness. Gave 30 c.c. pneumonia phylacogen subcutaneously.

January 22, 1912, temp., pulse and resp. normal. Gave 30 c.c. pneumonia phylacogen subcutaneously. Ordered three days additional rest, after which light work for a week. Animal discharged.

SILVER WEDDING—Dr. and Mrs. George H. Glover celebrated the twenty-fifth anniversary of their wedding day on November 19, last, and we are sure that the entire veterinary profession throughout the land wish them joy and hope that they will celebrate their golden wedding together. The humerous doctor said in a recent letter, referring to the approaching anniversary, "fifty years or bust," and we sincerely hope he reaches his goal.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

SOME CLINICAL CASES: [*W. R. Davis, M.R.C.V.S.*]—*Rhododendron Poisoning.*—Thirteen young cattle and thirty sheep broke through a fence and got into a field where there was a number of rhododendrons. The animals ate a considerable quantity of them, and some exhibited symptoms of poisoning. They staggered about, falling and rising; their eyes were staring and glossy. They slabbered, foamy saliva hanging about the mouth. Some vomited greenish material. Others had gnashing of the teeth, straining and diarrhoea. Only one animal died. The others were treated with oil, linseed gruel and bicarbonate of soda. They recovered.

Uterine Eversion in a Mare.—A short time after foaling and having received proper attention, a thoroughbred mare is rolling about with the uterus extruded. The animal is sweating, greatly excited, in pain, throwing herself down, rolling over and straining. The mare standing up, a twitch was put on her lip, the near fore leg held up, while two other assistants supported the womb and raised it as high as they could. The organ being held up and well washed with antiseptic, it was gradually pushed back in position and a West's clamp put on. There was no bad symptom afterwards.

Difficult Parturition in a Mare.—A thoroughbred mare is unable to foal. Two forelegs and part of the head of the foetus are projecting beyond the vulva. The foreleg of another foal is felt on examination. Hobbles were immediately applied and chloroform administered. As the parts were dried, the uterus was injected with large quantity of mucilage of tragawurth. With some little difficulty both foals were successively pulled out, the chloroform having rendered all the manipulations much easier.—(*Vet. Record.*)

OPEN STIFLE JOINT [*Lieut. A. N. Foster, A.V.C.*].—Seven-year-old bay gelding received a kick and is lame on the off hind leg, with a punctured wound on the outside of the off stifle.

There is a cutaneous cut, one inch and a half long, and blood-stained synovia is escaping freely. The treatment was as follows: Hair clipped, region disinfected, wound carefully and thoroughly syringed with sublimate solution (1 to 100), closing of the wound with four pin sutures and dusting with boric acid powder; laxative and soft diet. There was much swelling and pain at first, but the temperature remained normal and the appetite good. There was discharge between the stitches for a few days; then it gradually subsided, and the horse was discharged after a few days with only a slight stiffness of the joint, which a blister and a run to pasture for a month would help to remove. —(*Vet. News.*)

CARDIAC DISEASE IN THE HORSE [*E. Wallis Hoare, F.R.C.V.S.*]—Record of a very interesting case which ended fatally and is related as the two acts of a drama.

First Act.—Horse convalescent from cold is about being purchased, but in no condition to be galloped. Nearly a month after he is brought back to be tested, but he was scarcely fit for a gallop, having yet accelerated respirations, a slight cough, a dropsical swelling of the sternum and on the sheath and a temperature of 101° F. Advice is given to take him home, but before he had gone but a short distance he staggers, nearly fell down, and on examination exhibited evidences of marked cardiac disorder. He was placed under treatment of a combination tonic, iodide and nux vomica, and gradually improved in the condition of the circulatory apparatus. After a while the owner (dealer) insisted to take him home. The horse was sold afterwards, hunted and reported perfectly sound.

Second Act.—Several months after, the writer was requested to attend the same horse (but did not recognize it at first). He presented the exactly same symptoms as before, and on the evidence given the advised destruction was carried out, ending the drama.

Post mortem: Heart enormously enlarged. Fluid in pericardial cavity. Heart was spherical in shape and weighed 24 pounds. The left side was excessively thick. The mitral thickened had its surface covered with calcareous projection; the edges were thick, also the chordoe tendinoe. The tricuspid had the same lesions. The stomach showed catarrhal gastritis.—(*Veter. Record.*)

CLINICAL CASES [*J. H. Parker, M.R.C.V.S.*].—A nasty stake which injured a Shire gelding in the right groin, close to the

penis, in the position that the testicle would have occupied if the horse had been entire. Casting the animal was necessary. It then was easily pulled out from a hole three feet six inches (?) deep, the length of the stake. It ran upwards and backwards as far as the middle of the left thigh. Considerable swelling took place and required several punctures with small trocar. Recovery was comparatively simple and short.

Cystic Calculi.—Four-year-old, wire-haired fox terrier bitch had passed six stones per urethra, varying in size from a pea to that of a bean. She was chloroformed. The bladder was full of stones, sixteen in all. The urethra was blocked with one. There were two as big as a golf ball. The mucus was thickened and bad color.—(*Veter. Record.*)

FIBROLYSIN [*Henry Taylor, F.R.C.V.S.*].—Aged horse had sprained his hock. The joint was swollen and very hard. Iodine liniment failed in reducing the enlargement. Stronger binodide of mercury was then applied, but not to the benefit of the horse, which, although not very lame, was unable to flex the hock even to a kick, such was the condition and amount of tissue.

Fibrolysin was then obtained. Five injections were made at 3, 4, 7 and 8 days apart, in the gluteal muscles, alternate sides being used, and in addition massage of the hock with weak iodine ointment. No bad result followed from the injections. The swelling of the hock diminished, the movements became freer, and finally both joints looked about the same.—(*Veter. Record.*)

ABSCESS OF THE STOMACH WALL AND OESOPHAGUS [*Wm. Willis, M.R.C.V.S.*].—Aged mare has been dull in working and refused all food and drink. Temperature 102° F. She has had blowing fits during the day. The neck muscles are cramped. She takes handfuls of food, chews it some and drops it. Opening of the mouth with gag to examine the teeth set up movements as if she were about to vomit. Impaction of thoracic oesophagus is suspected. Arecoline is injected and followed by a second dose, as she then only drank quite freely after a period of salivation. For two or three days she seems to feel better. Then some swelling appeared at the base of the neck, round the entrance of the trachea into the chest, temperature ran up to 105° F., and finally the mare died on the eighth day of her sickness.

Post mortem: All abdominal organs healthy, except the stomach. The oesophagus was surrounded by a dark, dirty foul

effusion in the thoracic portion and on the cervical alongside the oesophagus and trachea there was connective tissue which seemed destroyed. The stomach showed a large abscess of its wall near the entrance of the oesophagus and seemed continuous with the lesions of this organ.—(*Veter. Jour.*)

NOTES ON A CASE OF TETANUS [*D. V. W.*].—Brown Arab filly, two years old, got a slight abrasion of the skin on the withers and from it got lockjaw. She is taken to dark loose box, and trephined on the cranial cavity, where 50 c.c. antitetanic serum are injected. Two ounces artificial Carlsbad salts in drinking water. A second injection is made the next day. During the night the mare falls and is unable to rise. The next morning she is much worse. Fifty c.c. antitetanic serum are injected by a new trephined spot on the cranium. Some improvement noticed in the afternoon. Tallianine is injected into the left jugular. Animal comfortable for the next two days. One pine of normal saline solution is injected in jugular. Two drachms of calomel in gruel. The day after, condition is worse, and collapse is feared. More Tallianine is injected with excellent results. Injections renewed for several days. Convalescence at last set in and recovery after five or six weeks. The case had been complicated with eversion of bladder on two occasions, but made ultimately complete recovery.—(*Veter. Jour.*)

INTERESTING FRACTURE OF OS CORONOE [*Prof. Hobday, F.R.C.V.S., and D. Dudgeon, M.R.C.V.S.*]—Well-bred Shire gelding got cast in the stall, off hind heel being caught in the loop of the head collar in such a way that the head was drawn back to the right side and the hind leg extended forward. There is only slight bruise of the heel. A few days after he becomes lame on that leg. He got over it after a few days and returned to work. Two days later is very lame again—abscess formed round the fetlock and front of the coronet. Treated, the animal does not improve, and an exploratory incision reveals the presence of a fracture communicating with the front of the pedal bone, with piece of loose bone. The horse was destroyed. The fracture was such that the interior of the os coronoe appears to be as if "scooped out," and the abscess apparently started from that, progressing downwards until the pedal joint became involved.—(*Ibid.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

CARDIAC RUPTURE IN ANASARCA [*Mr. C. Blain, Army Veterinarian*].—Five-year-old mare had given birth two weeks before to a healthy small mule. She has now lost her appetite, her milk, and has swellings of the four extremities. The animal is depressed, has temperature 39° C., the conjunctiva are covered with petechia. The vulva is swollen, red, painful and the seat of a muco-purulent discharge. Anasarca due to metritis is diagnosed. The uterus is injected with solution of permanganate, a purge, digitalis and acetate of ammonia are prescribed. As the swelling is increasing, ergotine is injected. Antistre stococcic serum not being at hand. After the second injection there is marked improvement. A third was made the following day. The animal dies almost suddenly. *Post mortem:* Opening of the thoracic cavity shows large mass of unclotted blood, with a rupture of the heart on the left side near the apex of the organ. Myocardium is soft. The rupture was attributed to the simultaneous use of digitalis and ergotine in an animal whose tissues were soft and in a state of degeneration—(*Journ. de Zootech.*)

OVERLOADED INTESTINES—COLIC OF EXCEPTIONAL DURATION—RECOVERY [*Mr. Payrou, Army Veterinarian*].—Horse has violent colic which is diagnosed as due to indigestion by overloading intestines. He is treated with alcoholized coffee, pilocarpine and arsenic in injection. The colic continues, notwithstanding a second dose of pilocarpine and a warm rectal injection. The next day, same condition; stercoral ball is detected by rectal examination, 300 grams of sulphate of soda are given and rectal injections. No result followed. More soda administered. Always negative results. This condition continues for several days. The appearance of the animal is bad, artificial serum is injected, castor oil administered. Yet no change. A fourth purgative is given and the animal left, his death being expected in the night. Instead of that, he is found the next morning up, eating his bedding and an enormous amount of droppings behind him, which was followed by another very large passage a few hours after. The constipation had lasted eight days.—(*Military Veter. Review.*)

SUPPURATIVE OSTEOMYELITIS OF THE LOWER JAW—TREPHINING—RECOVERY [*Mr. Haan, Army Veterinarian*].—Four-

year-old filly receives a kick on the inferior border of the right branch of the inferior maxillary. It seems to be a slight injury, and an antiseptic dressing and treatment is prescribed for the wound, which soon leaves only a small fistula, healing readily by escharotic injections. After several weeks mastication becomes difficult. The masseterine region is swollen; there is a fistula in the intermaxillary space and another where the original wound was. The animal is cast on account of his irritable disposition, and the probing of the fistulas reveals a sensation of crepitation of the bony tissue. The fistulas communicate together. Suppurative osteomyelitis is diagnosed. The fistulas are freely opened, antiseptic injections and a coat of blistering ointment prescribed. No result is obtained. The animal is thrown, the soft tissues are freely incised to expose the bone, trephining of the maxillary branch, curetting and removal of two necrosed pieces are carried out. Alcoholic solution of gaiacol antiseptic washings and tincture of iodine formed the base of the after-treatment. However, a second trephining and curetting of the part was necessary before complete recovery followed.—(*Ibidem.*)

Generalized Melanosis in Horse [*Mr. Cabret, Army Veterinarian*].—Light grey gelding has had numerous melanotic tumors in various parts of the body and of different sizes. One at the tail necessitated the amputation of that organ. Recovery was perfect. Some eighteen months after the horse gets lame on the right hind leg, and it is found that the cause is located in the plantar cushion, it is a melanotic tumor. Removal is carried out after an attack of influenza that the horse contracted. The tumor removed weighed 40 grams and invaded the thickness of the internal branch of the plantar cushion. The case did not progress favorably. Abscesses formed under the cartilages of the foot; the infection spread upwards. Afterwards the left leg became disabled and the animal was destroyed. *Post mortem:* The anus, tail, sheath, flat of the thigh, urethral canal, inguinal lymph glands are filled with numerous melanotic deposits. At the entrance of the chest a tumor lies on the trachea; it is as big as an apple. Tumors are also found on the auriculo-ventricular openings of the heart. Melanotic tumor on the costal wall on the psoas muscle.—(*Revue Veterin.*)

Two New Cases of General Paralysis in Dogs [*Dr. L. Marchand and Prof. Petit*].—*First Case.* Fox slut, 15 months

old, is said by the owner to have become blind after an accident which occurred three months previous. At that time she had no wound or fracture of the cranium. Since the accident her disposition has changed; she is no more lively and knocks herself about all the time. Her eyes are motionless, and she does not take any notice of gestures made before her. Her walk is unsteady, wabbling, and her legs seem flexed. She looks as if she was deaf, acts so, manifests no pleasure when petted, appears to notice no one, and finally has become dirty in her habits. When examined by the doctor, the following symptoms were observed: No amyotrophy, no apparent signs of algesic sensibility, eyes are normal, pupils slow to dilate or contract. Negative ophthalmoscope examination. Iodurated treatment without result. Animal destroyed. At post mortem lesions of diffused meningo-encephalitis well marked.

Second Case. Slut when 16 months old showed change in her disposition. She is quiet, remains alone in corners, has convulsions characterized by generalized shakings without loss of consciousness. Soon she has become very nervous, acts peculiarly, scratches along the walls for hours. Hydrophobia is feared by the owner. Veterinarian is called. The dog then walks staggering, has tendency to drop on the left side when in motion. The patellar reflexes are exaggerated. No paralysis, no amyotrophy. Feels pain when inflicted. She sees and hears. Has gluttonous appetite. She is cross, growls but not bad. No muscular or twitching jerks. Intelligence diminished. Does not recognize her master; since some time has become very dirty, dropping her feces and urine anywhere. These symptoms gradually grew worse, and the animal died when twenty-two months old. The histological lesions were those of meningo-cortical inflamflammation.—(*Rec. de Med. Veter.*)

Uterine Fibro-Myoma of a Cow [*Dr. Bidault, Army Veterinarian*].—This was found when the cow, about 10 to 12 years old, was slaughtered. No history of the case. The growth occupied the enlarged cavity of the uterus, giving to the organ a globular aspect. There was hypertrophy of the uterine walls. The neoplasmic mass had a regular spheric form, measured 32 c.m. in diameter and weighed 30 kil. 500. It was almost loose in the cavity of the uterus, attached to the mucous by fibro-vascular adhesions. Enormous as it was, the tumor was single and without peduncle. The histological examination proved it to be a fibro-myoma.—(*Rec. de Med. Vet.*)

LARGE OSSIFIED COSTAL CHONDROMA GENERALIZED TO THE PLEURA IN A COW [*Prof. G. Petit and Adjunct R. Germain*].—This was observed in a cow, which had a swelling on the right thoracic wall, on a level with the inferior third of the fourth, fifth and sixth ribs. This gradually increased in size and soon assumed the appearance of a tumor as big as a child's head, which was pushing against the shoulder. The animal was tuberculined without results. Considered as incurable, she was then killed. *Post mortem:* Besides the presence of generalized pleural lesions consisting in a great number of small tumors varying in size, some translucid, gelatinous in consistency and others with characters of cartilaginous tissue and here and there in their center hard, yellowish deposits. The lungs were free from disease. The primary neoplasm consisted of a round mass, irregularly bosselated, weighing 8 kilog., 20 cms. thick and 30 high. It had two portions, one extra thoracic, bilobulated, only one visible during life; the other intra-thoracic was spread downwards on the sternum, extending forward of the fourth rib and backward of the sixth. The general aspect was characteristic of chondroma.—(*Bullet. de la Soc. Cent.*)

LIPOMA IN A DOG [*Adj. Prof. Douville*].—Six-year-old fox-terrier slut two years previously had a tumor in the region of the loins, which since has grown and forms now a hemispherical mass, as big as a man's head entirely painless. It gives the dog a deformed appearance and notwithstanding its enormous dimension, the dog does not seem otherwise troubled with it, except that she is less active and has difficulty in moving about. The mass began on the loins and extends to the base of the tail. Its lateral faces are continued to the external one of the thighs. The neoplasm is attached to the croup, is elastic and fluctuating. A lipoma is diagnosed, and a surgical operation is the only treatment advisable. Notwithstanding the danger of such interference, the owner wants it, as the condition of the animal is such that it is not possible to keep her. After preparation of the patient and intraperitoneal chloral anesthesia, the skin is easily dissected out, but the fatty tissue of the growth renders impossible its entire removal from the gluteal muscles. An artificial dissection has to be made to remove by layers the whole of the fat accumulation. Four pounds were the weight of the growth. Abundant hemorrhage interfered much with the operation, but easily controlled. The dog died twenty-four hours after the operation from traumatic shock.—(*Rec. de Med. Vet.*)

RUPTURE OF THE UTERUS IN SLUT—PERITONEAL RESISTANCE [*Same Author*].—Eight-year-old slut has abdominal dropsy, well marked. An abdominal explorating puncture gives escape of two litres of clear fluid, reddish, odorless and albuminous. Its evacuation permits bimanual exploration of the abdomen, and a hard, immobile mass is detected, principally on the right flank. An explorating laparotomy is advised, and the owner consents. When the abdomen is open, a rush of liquid escapes and exposes near the posterior face a mass as big as the fist, covered with omentum, which when removed is found to contain a foetus at term. Another foetus is found, engaged towards the body of the uterus, while the right horn of this organ has a large rupture partly closed by fibrinous deposit and thickened omentum. A further examination reveals the right of liver covered with fibrinous deposits, which was torn off carrying away little pieces of the liver. The abdomen was then dressed and closed with special dressing. Three days after the slut died. Port mortem revealed extensive and severe peritonitis and a third foetus macerated and enveloped in a pouch of the omentum.—(*Ibid.*)

GERMAN REVIEW.

SALVARSAN AND ITS ADMINISTRATION IN MURRAIN IN THE RUSSIAN ARMY [*Professor I. Gordsjalkowsky in Journal Veterinary Wratsch,* 1912, *Nos.* 18-20].—The use of salvarsan on horses of the Russian Army was first introduced in January, 1911, by Dr. L. Liniszky. He had applied this product previously in twenty-three cases with perfectly satisfactory results, although injection was made subcutaneously.

In order to examine the therapeutic effect after injection into the blood, various experiments were made on the horses of the Fifth Cavalry Regiment, in which the murrain had been spreading rapidly since October, 1911. For this purpose Professor Ehrlich supplied the author with 128 grammes gratis, which kindness was appreciated very highly. The results obtained were as follows:

Signs of unrest were noticeable in but a very few cases; after injection respiratory difficulties became apparent; no swellings appeared at the points of injection. In all cases signs of weakness in various degrees were observed, which sometimes manifested themselves in a desire to lie down. The horses showed uneasiness, frequently changing their positions. With several,

the temperature increased after two to four hours, but, as a rule, after several hours this uneasiness disappeared. In all 50 horses were treated, the injections being made in the first stages of the disease; in four cases on the day the horses were brought to the hospital, which was immediately after detection of the malady; in 35 cases on the second, and in three cases on the third and fourth days.

As is usually the case, the registered temperature was 104 degrees Fahrenheit to 105.8 degrees Fahrenheit, the respiration 30 to 40, and in some instances rales of the pleura could be distinctly heard. Various parts of the lungs were affected, the pulse increased from 70 to 80, and all signs of pleuro-pneumonia were distinctly perceptible.

All clinical data and observations recorded by the veterinarians Linizky and Woskressensky show that the temperature usually fell after six or eight hours, except in one fatal case, and after 48 hours was again normal, at the same time the inflammation of the lungs and pleura disappeared. In some cases the action of salvarsan was marvelous. One horse was breathing very heavily, his forelegs outspread, the vesicular murmur in the lower third of the lungs was completely lacking, the rales plainly noticeable, and all symptoms of a malignant case were apparent. The injection was made at 10 p. m., 72 hours after the appearance of the disease, the horse showing a temperature of 105.3 degrees Fahrenheit at the time. The following morning it had declined to 100.8 degrees Fahrenheit, the rales were becoming less distinct, soft vesicular breathing was restored. In six cases repetition was necessary, as the temperature, reduced by the first injection, after two to four days again rose to 104 degrees Fahrenheit. These horses were first treated with two grammes of salvarsan and the second time with one gramme, which proved to be sufficient to insure complete recovery. Other horses whose symptoms were less severe were given smaller doses varying from one to one and a half grammes. In these cases after a slight recovery, a partial relapse occurred which necessitated a repetition of the injection whereupon rapid recovery resulted.

In order to determine the rate of the reduction of the fever, the temperature was taken at intervals of two hours with nine horses exhibiting high temperature and severe symptoms. It was determined that after two hours the temperature of several horses declined a few tenths of a degree, in other cases, however the temperature increased to 105.8 degrees Fahrenheit and more,

which, however, in six cases dropped from one to two degrees in six to eight hours. The temperature of two horses sank in the same measure within 24 hours. In one case, however, the temperature increased and reached 108 degrees Fahrenheit after four hours with the result of the death of the horse later.

It should be mentioned that this horse, like the others, received an injection of three grammes salvarsan, which is the largest amount of salvarsan used during these experiments. This leads to the belief that blood poisoning took place owing to anaphylaxis. This was the only fatal case among the horses treated with salvarsan. The doses tolerata for the average young cavalry horse, weighing 25 pud—1,100 pounds, should not exceed two grammes. In cases where complete recuperation does not result, it would be advisable to repeat the injections after the elapse of from 24 to 48 hours. Owing to the treatment with salvarsan, the pleuro-pneumonia was eliminated, which was not the case with the other methods of treatment applied in the very same regiment and during the same epidemic. The author, as well as other prominent Russian veterinarians, consider salvarsan a specific remedy for pleuro-pneumonia in horses. It is advisable not to reduce the dose of salvarsan and it is recommended to give the injections right from the start, using a solution in the proportion of 1 : 500, which must be intravenously.—(*Tierärztliche Wochenschrift, September,* 1912.)

The Effect of Salvarsan on the Cause of Infectious Abortion [*Dr. Francesco Favero, in Parma*].—The experiments were made on dogs. The animals were injected with 10 c.c. of virus into the peritoneum and either simultaneously or during the time of incubation or finally at the height of the infection with the dose of 12 c. gr. salvarsan per 1,000 gram body weight. The solution of the latter was injected intravenously. It was demonstrated that if virus and salvarsan were injected simultaneously, the disease could not manifest itself at all. Whilst when salvarsan was administered at the time where already numerous trypanosomæ were present in the blood, the trypanosomæ disappeared the day after the injection. A dog, moribund, recovered after the injection of salvarsan and was in good condition after 20 days. In conclusion, the author says that intravenous salvarsan injection, with dogs, has a powerful action on *Trypanosoma equiperdum* in preventing the infection when injected simultaneously with the virus or during the time of incubation, or later injected after the appearance of the parasites in the blood destroys these speedily.—(*Tierärztliche Wochenschrift, September,* 1912.)

BREEDING PROBLEMS.

ANIMAL BREEDING AND RELATION OF AGRICULTURE TO VETERINARY MEDICINE.*

By JOHN F. DEVINE, D.V.S., Goshen, N. Y.

The word " breed " brings to our mind different terms which are applied to man, animals and plants to denote the same idea. We speak of men as a race, of domestic animals as a breed, and of wild animals or plants as a specie or variety. When we speak of an animal as being " pure-bred " we mean to infer that it has been bred along lines that so fixes its type as to give it power to transmit certain characteristics to its progeny. The most obvious fact about living beings is their variability. Not only do species differ from each other by many and widely different characters, but individuals within the species are distinguished by what is readily discernible at least by the trained observer. However, to the trained eye there are characteristics in different breeds of animals which are very apparent even at first sight. To illustrate: One who is familiar with the various breeds of cattle could readily pick out the Holstein from the Durham, or the Durham from the milking strain of the brown Swiss. Likewise one could readily differentiate between a Guernsey and Ayrshire, or a Jersey and Guernsey, even though there is great similarity in the size and in a way in the general make-up of the three former and of the three latter breeds. This is equally true in the equine family. A practical horseman could tell at a glance the difference between a hackney and a thoroughbred, and so on with the various breeds of other animals, such as sheep, pigs, dogs, etc.

It is true that environments and geographical conditions have considerable influence upon the characteristics of a race or breed, but environments are perhaps not of such vast importance as some would have us believe. As an example of this we might cite the characteristics of the Hebrew whom we are told was " doomed to wander the earth " and is found in most all climes and mingling with all classes, but still has through all these years maintained his individual peculiarities, particularly as to facial form and characteristic nature.

* Written for AMERICAN VETERINARY REVIEW and read before the Veterinary Medical Association of New York City.

We who are interested in the breeding of animals should first determine the kind of animals that we wish to breed, and in determining that we should take into consideration local conditions, markets and the like. If we have in mind the breeding and rearing of horses we should breed and rear the kind which is best adapted to our locality, to our soil and to the market. To illustrate: There are certain sections of New York State that seem to have been adapted to the raising of the hackney and the hunting horses. I refer principally to Livingston County. Here conditions seem to be right for the proper training of the hunters, and custom has established a market where people in search of such class of horses are apt to go. Consequently, the raising of the heavy draft horses in this locality would not seem advisable or good business sense. Again, there are other localities of the State, particularly Orange County, that have been noted for a century or more for the breeding of trotting horses. Here the natural grass lands and the improved race-tracks have made it a spot where those in search of high-class trotting animals wend their ways. And then again another section of the State, possibly a little rougher in character, would be best adapted for the raising of heavier horses. Like conditions would also be necessary for those to consider who would be interested in the breeding of pure-bred cattle. In our natural grass lands, near milk depots where the methods of marketing milk are improved and handy, it would not seem good judgment to raise and care for the Ayrshire or Channel Island breeds. Again, if we were in a locality where the land was considerably hilly and the pasture not so plentiful, it is a known fact that one of the hardier and lighter breeds, such as the Ayrshire, would be more adapted and perhaps more profitable for such localities.

In selecting a breed it is first necessary that we choose the right kind of animals to breed from. For instance, we would not choose a mare or stallion with badly curbed hocks or congenital ringbone or with faulty conformation; particularly in breeds of animals in which conformation means so much. Neither should we choose a cow of an objectionable type unless she is known to be of special individuality from a productive standpoint. Neither should we head our herd with a bull that is the son of an unknown dam.

After we have decided upon the breed most adapted to our wants let us remember first, last and always to stick to that breed unless we have very positive reasons for changing. At any rate do not attempt by cross-breeding to improve our wants, since

theoretically cross-breeding seems very inviting to the misinformed, with the hope perhaps of improving the size of the Jersey or butter fat of the Holstein, which in reality might be done in an occasional instance, but the offspring of such individuals if carried on is apt to lead us to ruin. If we wish to improve the qualities we should do so by selecting individuals of the same breed to accomplish our desire. We should also bear in mind that it is not well to breed animals that are too young. The reason for this is plain if we stop to consider. The immature animal requires the added amount of nutrition that is available in the body, in addition to that required to sustain life for the proper growth and development of that body, and, therefore, to ask of the young animal the maintenance and proper growth of the embryo at a time when its body is still exacting certain nutrition for proper development, is unwise and unreasonable. It is the exception rather than the rule that we see the first-born of parents extremely young as remarkable in the things that go to make up merit either in the human or animal family, as we do those born at a time when parents are more matured.

This leads us to the proper nourishment of the young during the period of gestation. Unfortunately in the past the average breeder has not given the necessary attention to the pregnant animal. It has been the supposition that the straw stack was quite good enough for the pregnant dairy cow or the brood mare, when as a matter of fact the mother that is expected to nourish the unborn young and at the same time maintain a strong physical condition of the body should receive as much attention at that time, in the case of a brood mare, as if she were performing regular work, or, in the case of a cow, as if she were producing in a dairy. We should never lose sight of the fact that if we wish to have our young stock come into this world in a healthy condition, ready to start a vigorous growth, the mother of such animals must be properly nourished during the period of advanced pregnancy. If our various animals were kept on proper rations and received proper amount of nutrition during the last few months of pregnancy, instead of being allowed to decrease in vitality, the serious complaints of our breeders, of the loss of calves, loss of colts and loss of lambs, would be reduced greatly. Let us assume that there has been brought into the world a young animal, bred from proper parentage, vigorous in body and in constitution; we should immediately begin to give such attention to that animal as to produce a strong, healthy growth, since much thought to the future of an animal of quick development depends

largely upon its condition at birth and the subsequent attention for the first year or 18 months.

The burden of instructing stock owners as to the proper rations and nourishment for working animals and growing the young has been taken up largely by our excellent agricultural schools and experiment stations. Very useful information as to the value of different food stuffs and the compounding of balanced ration with the relative requirements of different animals is plainly put forth in the bulletins issued by such institutions. But, as agriculture has advanced, the duties of the veterinarian in instructing stock owners in sanitation and prevention and cure of diseases of their animals has constantly increased until to-day the services of a well-trained veterinarian is rightfully sought in even the very rural districts of most states.

Believing that the short review of the history of veterinary medicine might be interesting particularly to the younger men, I have attempted to compare the positive relation of veterinary medicine to that of agriculture. One does not need to be a Methusaleh to remember when veterinary medicine was practised in this country almost exclusively by the charlatan, but as the value of domestic animals increased and their worth became more and more appreciated, attention was slowly turned to guarding their health and adding to their comfort and usefulness.

Prior to the establishment of a Veterinary College in New York City in 1857, our graduated veterinarians were of necessity those from foreign shores. They were few in number, and the treatment of livestock was largely in the hands of blacksmiths or other laymen, who, in some cases, professed to be endowed with supernatural knowledge of animals and their diseases. However, it was fortunate at this period that there were some men with good judgment and sincere purpose, who took an intelligent interest in the study of anatomy, physiology and materia medica. To this class of men we owe much, as they honestly attempted to relieve the suffering of the dumb brutes, and if their efforts were of but little avail, they served a purpose by indirectly pointing out to the owners of livestock the advantage of even a little accurate knowledge in the prevention and treatment of diseases.

After the establishment of our Veterinary Colleges in this country, the value of graduated veterinarians who were scientifically trained in the treatment of domestic animals, as physicians were in the treatment of human diseases, soon became apparent, and I believe it can be truthfully said that no profes-

sion ever made greater strides than has the veterinary profession during the last quarter of a century. This has been made possible by the establishment of properly equipped Veterinary Colleges where the fundamental principles of anatomy, physiology, pathology, bacteriology, chemistry, botany and materia medica and like subjects are properly taught. Another very important factor in the advancement of veterinary science has been the enactment of state laws seeking to prevent the empirical practising of the past. Without such laws this state would be infested with armies of unprincipled impostors who would prey upon the public, which would not at all times be able to differentiate between the regularly licensed and qualified men and the unscrupulous, dishonest and ignorant fakers. These laws not only protect the public directly, but indirectly make the profession more inviting for men of higher moral and intellectual qualifications.

To practise veterinary medicine in this state (New York) one must now register in the county in which he wishes to practise. In order to be eligible for such registration it is necessary that the applicant successfully pass the State Board of Regents. To be qualified to enter into such an examination one must be the possessor of a diploma conferred by a recognized Veterinary College, the full course of which must cover three periods of at least six months each. The entrance requirements of such a college is an academic diploma or its equivalent.

The veterinarian of to-day, we have said, should be a man who can give valuable advice in regard to the care and health of animals, and in addition he should be a man who is capable of coping with sanitary questions that might involve great loss to our enormous investments in the livestock of our state, or possibly be transmitted to the human family.

In reminiscencing I well remember when a boy on the farm how I looked with boyish terror to the occurrence with regular frequency in our herd of "hollow horn and wolf in the tail." This was equally true of the cows that "lost their cuds." To-day as most of our animals are dehorned, the fellow with the gimlet and turpentine has lost his job, but I believe there is still occasionally a cow that is affected with "wolf in the tail," particularly if you go into the extreme rural district where there is a fellow with a sharp knife and some pepper and salt handy, with nothing much else to do.

I remember vividly when I first began the practice of veterinary medicine that I was called one day to stop a hemorrhage which had been caused by a family pet horse stepping on one

of its extremities with a sharp heel caulk. After I had stopped the bleeding and dressed the wound, the owner was very grateful. "Young man," he said, "I wish to tell you something that I feel will be of use to you all your life. You know cows sometimes lose their cuds." (I knew very well that they did not. However, I did not feel justified in stopping him in the midst of his friendly advice.) He then told me of a sure cure, and it was this: "When you get a cow that has lost her cud, if you can find a yearling near by that is chewing hers, reach into the yearling's mouth, grab her cud and give it to the old cow, and she will be cured immediately." I then asked him if it were a fact that cows lost their cuds, where would the yearling get another. It seems that this argument had never occurred to him.

We know to-day from our knowledge of physiology and anatomy that ruminating animals do not thoroughly masticate their food when they first eat it, but swallow it hurriedly and it goes down into the first stomach or paunch, and later they regurgitate it to be remasticated at leisure, and it then passes into the second, third and fourth stomachs for digestion, absorption and assimilation. Therefore, one of the first symptoms of any ailment in a cow, let it be what it may, is quite apt to be cessation of regurgitation, or "chewing her cud," as it is called. It is therefore classified as a symptom only, which is equally true of a cow with cold horns or extremities or a flaccid tail. We all know very well that ofttimes simple ailments, such as a cold or the Grippe will cause our extremities, hands and feet, to become cold; in fact this is one of the first symptoms giving evidence of disturbed circulation. These symptoms mean nothing definite in themselves, but are to be taken into consideration with other clinical conditions by one whose training and observations find significance in their presence or absence.

The first thing usually sought for by the scientists is a correct knowledge of things as they are in the normal, so to speak. By the knowledge of the normal we get a starting point from which to trace the abnormal. This is equally as true in the art of medicine and veterinary medicine, and points out to us the harm in many ways that may result from the empirical dosing of animals. There is no question in my mind, but that many a valuable animal has met an early death due to the overzealous dosing of aconite, the treatment destroying the only chance that nature might have had in overcoming the ailment.

Again how often has the rural practitioner been called to treat the pride of the dairy and finds her down with what is

commonly called milk fever. (This is a misnomer, since this is not a febrile condition.) He secures the animal on her side, properly disinfects the udder and surrounding parts and, with a sterile apparatus and with all possible care to guard against infection, proceeds to administer the oxygen treatment. During this time he has probably been advised that some well intended but badly informed individual has administered the sure cure drench, which, owing to the paralysis of the throat and inability to swallow, has been poured directly into the larynx, the trachea and lungs. The animal makes a gratifying recovery from milk fever and dies in due time from mechanical pneumonia.

Those of you with experience could of course recite volumes of instances of this kind, where lack of knowledge has cost stock owners the lives of many of their valuable animals, but the young men who are entering the veterinary profession to-day will have but few of these vicissitudes to contend with. Times have changed; the owners have come to believe that the rules set forth by capable veterinarians and the advice not to drench animals unless they are positive in their diagnosis and treatment is sound judgment. I think we are justified in saying to the laymen: If you are guessing let nature take a hand. She will beat you out nine times out of ten.

PHILIPPINE CIVIL SERVICE EXAMINATION, AGRICULTURAL INSPECTOR (MALE), DECEMBER 11-12, 1912.—The United States Civil Service Commission announces an open competitive examination for agricultural inspector, for men only, on December 11-12, 1912. From the register of eligibles resulting from this examination certification will be made to fill four vacancies in the Philippine Service, at entrance salaries of $1,200 and $1,400 per annum, the majority of the vacancies being at $1,400 per annum, and vacancies as they may occur in positions requiring similar qualifications, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

Applicants should at once apply to the United States Civil Service Commission, Washington, D. C.

Each applicant will be required to submit with his application a photograph of himself, taken within three years, which will be filed with his papers as a means of identification. An unmounted photograph is preferred.

CORRESPONDENCE.

THE KANSAS HORSE PLAGUE.

FORT COLLINS, COLO., Nov. 16, 1912.

Editors AMERICAN VETERINARY REVIEW, *New York:*

The disease in Kansas and a few surrounding states, which killed many horses during a period of about two months, has abated and speculation is rife as to what it really was and what caused it. One thing is certain, there was a low percentage of susceptibility and a high degree of mortality and there is no reason to assume that the future is exempt from equally disastrous visitations. A disease simulating this one has in the past appeared sporadically, as most veterinarians can testify. These outbreaks have by assumption, because of apparent uniformity in symptomatology and etiology, been placed in one category—cerebro-spinal meningitis, due to forage poisoning.

The extent of the recent outbreak stretches this assumption to the breaking point and we are forced by the accepted standards of laboratory investigations to withhold judgment as to the causative agent in this case until some definite experiments have afforded us some foundation for our faith in this assumption. Among other things, animal inoculations made at Holly, Colo., have given such positive results as to lead us to assume that in all probability it is caused by a specific micro-organism and that the results thus far obtained warrant further investigations along this line.

GEO. H. GLOVER,

VETERINARIAN GOES TO LEGISLATURE.—Dr. E. E. Bittles, of New Castle, Pa., a graduate from Toronto in 1890, was elected to the Pennsylvania Legislature at the last election.

OF GREAT INTEREST TO PRACTITIONERS.—After carefully reading Dr. F. N. Sawyer's report of three years' experience with phylacogens on page 273, in which he deals with the philosophy of that form of therapy, practitioners will find interesting data in the doctor's detailed report of fourteen cases treated by that method on page 334.

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular monthly meeting of this association was called to order by President Berns in the lecture room of the New York-American Veterinary College at 8:30 p. m., November 6, 1912.

Dr. McKinney, chairman of the prosecuting committee, reported that a certain man goes about injecting something into the shoulders of horses, and guarantees a cure in any case of lameness. The doctor had this party arrested and he is now out on bail, the trial to come up in the court of Special Sessions week of November 10. Dr. Pendry, of Brooklyn (formerly a veterinarian, now practicing law), had been retained to prosecute the case.

It was recommended that we try to get better laws, and it was also stated that we now have a veterinarian in the Assembly.

Dr. Childs presented a canine patient, a black pomeranian, with a cleft palate. The history of the case was that the dog coughed and regurgitated food through the nostrils. Was first noticed about September. Dr. Childs requested that some one suggest treatment for this case.

Dr. Killilea (M.D.) replied that the palate could not be closed unless a hypoplastic growth was produced.

Dr. Schlessinger stated that if it were scarified, sutured and treated with nitrate of silver it might cause the parts to unite, as he considered it sufficiently far back to be beyond the hard palate, but gave a grave prognosis.

The chair asked if it is a commonly recognized condition.

Dr. Schlessinger answered that it was, and Dr. Clayton said that it is not an uncommon condition. Dr. Crawford said that it is quite common, and that he had a case at the present time. He follows Hobday's method of scarifing and using silver nitrate.

Dr. J. F. DeVine, of Goshen, N. Y., read a very excellent paper entitled "Animal Breading and the Relation of Agriculture to Veterinary Medicine."

Drs. Clayton, T. E. Smith, Ackerman, Schlessinger, Mc-

Kinney and Nichols entered the discussion of this interesting subject.

Some of the points brought out were as follows; viz., colors usually are the result of prepotency, but markings are more apt to follow than solid colors.

In old mares that are bred ovulation ceases after being bred, therefore mares bred regularly do not as soon become senile as those bred late in life.

The question "Should we keep up our pure breds?" is answered that it is better to breed the size you want of pure breds than to cross to get the kind of animal wanted.

On the whole pure breds were favored in preference to grades or cross breds.

The question was asked "Can the common draft horse be profitably bred in New York State?" This depends on the locality. In the northern part of the state good corn and mixed hay are raised, and it is considered profitable to raise these horses at the present time.

Dr. L. Greissman then read a paper entitled "New York's Equine Plague." This article was productive of quite an animated discussion of the glanders question in its present stage.

Dr. Ackerman opened the discussion and stated that he believed that 15 per cent. of the horses of this city, if tested, would be found to be glandered. He recommends the destruction of all reactors. Also mentioned the public watering trough and horseshoeing shop as factors in disseminating the disease.

Other members expressed the opinion that even a higher percentage than that given by Dr. Ackerman would be found glandered on test.

This discussion was continued at some length.

Dr. Robert W. Ellis stated that it was his opinion that glanders should be regarded as a scourge, in which radical methods should be used for its control and eradication. He stated that to be successful it would have to be state-wide and that a systematic inspection would have to be carried on simultaneously in every county of the state, even though it be necessary to have a veterinarian in every county and deputies to the county veterinarian where the size of the county or its horse population demanded it. These deputies to be responsible to the county veterinarians, and the county veterinarians to be responsible to the chief veterinarian, who would in turn be responsible to the Commissioner of Agriculture for the proper carrying out of whatever measures were adopted. He believed that the mere removal of

cases as they appear entirely inadequate and favored a plan that would include general state-wide systematic *inspection* in every county in the state at the same time.

Dr. Kingston stated that a high percentage of the stables are not clean and questioned if it is right to take out a few horses on clinicial symptoms and the mallein test and leave the others under the same unsanitary conditions.

It was also stated that some unscrupulous veterinarians are in the habit of testing horses and sending reactors through the public sales.

Dr. Ackerman stated that the Commissioner of Agriculture intended calling a meeting or conference of veterinarians to hear their views on this important subject.

Dr. Mangan stated that he believed vaccine is of great value as a prophylactic agent in glanders if produced from the strain of organisms found in stable in which it is to be used.

Dr. Maffitt Smith reported a suspected case of glanders in a man.

Dr. McLaughlin moved that a committee be appointed to investigate this case; seconded and carried.

The chair appointed the following members to act on this committee: Drs. McLaughlin, Smith, Schlessinger, Ellis and MacKellar. Dr. Killilea (M. D.) was requested to act as consultant.

Dr. H. D. Gill stated that in his opinion glanders should be handled as a dangerous scourge, and moved that Drs. Ellis, Mangan, Foy, Cochran and Clayton be appointed as a committee to devise plans for the control and eradication of glanders in this state, and submit the same to the Commissioner of Agriculture. This committee to report to the association in the near future, seconded and carried.

A vote of thanks was tendered Drs. DeVine and Greissman for their contributions to the program of the meeting.

Meeting adjourned subject to the call of the chair.

R. S. MacKellar,
Secretary.

Special Meeting.

A special meeting of this association was called to order by the president November 18, 1912, at 5:30 p. m., in the lecture room of the New York-American Veterinary College.

Dr. Berns explained that the object of this meeting was to receive and act on the report of the special committee appointed

to devise ways and means for the control and eradication of glanders in New York State.

Dr. Ellis, chairman of the committee, stated that the full committee had held a meeting in his office on the evening of November 8, 1912, and drafted some recommendations to be submitted to the association for their approval.

These recommendations were read by the secretary, and after being modified in some respects were adopted.

The following members were appointed as a committee to present these recommendations to the Commissioner of Agriculture for his consideration and attend the conference on tuberculosis and glanders to be held in Albany, N. Y., November 19, 1912: Drs. Berns, Ellis, Cochran and MacKellar. Meeting adjourned.

R. S. MacKellar,
Secretary.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of the M. V. M. A. was held at Hotel Coburn, Skowhegan, October 9, 1912, at 7:30 o'clock, with the president, Dr. Wescott, in the chair.

Among the members present were: Drs. Wescott, Lynch, Purcell, Stevens, Robinson, Russell, West, Newton, Joly and Salley. Dr. H. N. Eames was a welcome visitor. The legislative committee not being present, no report was made. An interesting report of the last meeting of the A. V. M. A. was given by Dr. Robinson, who was the delegate from this association.

New Members.—Drs. Charles Lorin Ryan and Henry Bennett Wescott having been favorably reported on were unanimously elected to membership. The application of Dr. Harold N. Eames was referred to the executive committee.

Nominations for State Veterinarian.—As there were more than one candidate, the president suggested that a bollot be cast, this was seconded and carried, and the result gave Dr. A. Joly the ballot.

It was then moved and seconded that a committee be appointed to wait until Dr. McGillycuddy to convey condolences and good wishes and to acquaint him of the fact that he had been unanimously elected to honorary membership for the remainder of his life.

It was then proposed, seconded and carried, that the president be reimbursed, out of the founds, the amount of ten dollars ($10),

paid by him to Dr. Simpson after the Portland meeting, and that Dr. Salley be authorized to send the president that sum.

It was further moved, seconded and carried, that a committee of three be appointed to arrange a banquet for the next meeting, which is to be held at Augusta; Drs. Blakely, West, Wescott and Robinson were duly appointed.

The meeting was then by mutual consent adjourned, and an impromptu discussion was held in regard to impending legislation.

DR. C. W. WATSON,
Secretary.

LOUISIANA VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of above association was called to order at New Iberia, October 2, 1912, by President Douglas, who introduced Mayor J. S. Power, of New Iberia, who gave an address of welcome and a very interesting talk.

Dr. Dalrymple responded to the address of welcome in his usual amiable and competent manner, mentioning our standing as compared with other states.

In the evening the association was banqueted by the municipal authorities and Board of Trade at one of their splendid club houses a few miles from the town, the trip being made in automobiles.

In the morning of the next day we were entertained by a visit to the Avery salt mine, one of the notable mines of the world, and found more salt than our patients could lick in 24 hours. We all brought a little salt from the mine to keep down any freshness that might arise.

In the afternoon several valuable papers were read, one by Dr. Cambon on "Hydrophobia," and another by Dr. Flower, "The Veterinarian as a Sanitarian."

At night Dr. Dalrymple gave a lecture on "Milk Hygiene," with stereopticon views, and packed the Opera House to its capacity with "standing room only" sign exhibited.

This is the first attempt that we have made at a semi-annual meeting. Our plan for the future is to have a meeting in New Orleans in the winter and one somewhere in the country in the summer.

HAMLET MOORE,
Secretary.

NEWS AND ITEMS.

DR. LIAUTARD RECEIVES CALL FROM ONE OF HIS STUDENTS.—Dr. Robert W. Grutzman, class of 1896, A. V. C., called on Dr. Liautard in Paris in October. It is needless to say that Dr. Liautard was glad to see him. After visiting Dr. Liautard, Dr. Grutzman went to Germany. where he was to meet Dr. Schwarzkopf.

DR. CLELL BRICKER PERKINS, Centerburg, Ohio, was married November 18th to Miss Flo Vaughn Burrell, of Croton, that state. We are sure that the doctor has the good wishes of all the veterinarians in the Buckeye state and of all others that know him. The REVIEW wishes him success and happiness in his new estate.

SURRENDERS TO CUPID'S BATTERY.—After a courtship of twenty-four years, Dr. Patrick Burns, of New York City, was married on October 24 to Miss Rose Hayes. The REVIEW congratulates the good doctor in having been able to find the right word at last by which to make himself clear to the young woman who has consented to be his life partner, and feels sure that he has much the better of the bargain; although we can congratulate Mrs. Burns on the fact that she has one of the best fellows in the world for a husband.

THE ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION—A circular letter issued by Secretary Merillat, after our November number was out, gives a very attractive outlook for the coming meeting on December 5th-6th-7th, and every veterinarian who can possibly do so should avail himself of it. The International Live Stock Exposition and the annual meeting of the U. S. Live Stock Sanitary Association, which precede the Illinois State Veterinary Medical Association meeting, makes Chicago an attractive place the first week in December.

WOULD AMEND AGRICULTURAL LAW.—At the request of a considerable number of people and several organizations, Commissioner Calvin J. Huson called a conference on glanders and tuberculosis in the Assembly Chamber at Albany, November 20. It was the commissioner's desire to have every possible interest represented. The tuberculosis question proved such a big one that the subject of glanders was not reached, and it is the commissioner's intention to call a conference in New York City to consider glanders alone, in the near future, as he is deeply interested in the matter.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alabama Veterinary Med. Ass'n..	August, 1913 ..	Auburn.....	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.....	....	141 W. 54th St.	J. F. Carey, East Orange, N.J.
American V. M. Ass'n.....	Sept. 1-2-3-4-5 '13.	NewYork, N.Y	C. J. Marshall, Philadelphia.
Arkansas Veterinary Ass'n.....	.....	.....	J. B. Arthur, Russellville.
Ass'n Médécale Veterinare Française "Laval".....	1st and 3d Thur. of each month	Lec.Room,Laval Un'y,Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha ..	3d Mon. ea. mo.	S.Omaha, Neb	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.....	Dec. 11, 1912.....	San Francisco	John F. McKenna, Fresno.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n....	June and Nov...	Syracuse.	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.....	Jan., 1913	Denver	B. F. Kaupp, Ft. Collins.
Connecticut V. M. Ass'n.....	Feb. 6, 1912.....	Hartford	B. K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan.Apl.Jy.Oct.	Wilmington ..	A. S. Houchin, Newark, Del.
Essex Co.(N. J.) V. M. A.....	3d Mon. ea. mo.	Newark, N. J.	J. F. Carey,East Orange,N.J.
Genesee Valley V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	.....	Atlanta.....	P. F. Bahnsen, Americus.
V. M. A. of Geo. Wash. Un'y.....	2d Sat. ea. mo..	Wash., D. C..	A. T. Ayers.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Idaho Ass'n of Vet. Graduates....	.....	Boise.....	G. E. Noble, Boise.
Illinois State V. M. Ass'n.....	Dec. 5-6, 1912...	Chicago	L. A. Merillat, Chicago.
Indiana Veterinary Association.	Jan. 15-16, 1913..	Indianapolis ..	A. F. Nelson, Lebanon.
Iowa Veterinary Ass'n.....	Nov., 12-13-14 '12	Ames.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n...	January, 1913...	Topeka.	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb. ea. yr.	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	.....	.....	E. H. Yunker, Phila.
Lake Erie V. M. Association.....	Oct 8-12, 1912...	Lorain, O.....	Phil. H. Fulstow, Norwalk,O
Louisiana State V. M. Ass'n.....	.....	....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n	Jan., 1913.	Augusta	C. W. Watson, Brunswick.
Maryland State Vet. Society.....	.....	Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. ea. mo.	Young'sBost'n	J. H. Seale, Salem.
Michigan State V. M. Ass'n.....	Feb. 4-5, 1913...	Lansing	W. A. Ewalt, Mt Clemens.
Minnesota State V. M. Ass'n.....	July 10-11, 1912.	Minneapolis...	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n....	.....	.....	Wm. P. Ferguson, Grenada.
Missouri Valley V. Ass'n.....	.....	.....	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n	July, 1913.....	Kirksville.....	S. Stewart, Kansas City.
Montana State V. M. A.....	Jan. 1913.....	Bozeman	A. D. Knowles, Livingston.
Nebraska V. M. Ass'n.....	January, 1912....	Lincoln.....	W. H. Tuck, Weeping Water.
New York S. V. M. Soc'y.....	Jy. 30-31, Aug. 1	Utica.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June, 1913.....	Salisbury.. ...	M. J. Ragland, Salisbury.
North Dakota V. M. Ass'n.....	Jan., 22-23, 1913.	Fargo.....	C.H.Babcock, New Rockford.
North-Western Ohio V. M. A.....	Feb. and Nov...	Lima.	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med..	Annually	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.....	.....	.....	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Dec. 14-15, 1911.	Okla. City....	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	April, 1912.....	Toronto	C. H. Sweetapple, Toronto.
Pennsylvania State V. M. A.....	Sept. 17, 1912....	Wilkesbarre...	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.	Sam. B. Foster, Portland, Ore
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence ...	J. S. Pollard, Providence
South Carolina Ass'n of Veter'ns	.....	.....	Clarence E. Smith, Greenville
So. Illinois V. M. and Surg. A....	Jan. 2-3, 1912...	Centralia	F. Hockman, Louisville.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo
Schuylkill Valley V. M. A.....	Dec. 18, 1912.....	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....	.....	Philadelphia..	B. T. Woodward, Wash'n, D.C
South Dakota V. M. A.....	2d Tues. July '12	Aberdeen.	S. W. Allen, Watertown.
Southern Auxiliary of California State V. M Ass'n.....	Jan.Apl.Jy.Oct.	Los Angeles..	J. A. Dell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp..	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Mar. 18 19, 1912..	Fort Worth...	R. P. Marsteller, College Sta
Twin City V. M. Ass'n.....	2d Thu. ea. mo .	St.P.-Minneap	S. H. Ward, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Mar., 1912	Logan	A. J. Webb, Layton.
Vermont Vet. Med. Ass'n	.....	....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—9th St., N. W.....	Saskatchewan, Alta., Can. M. Page Smith, Wash., D.C.
Vet. Ass'n of Manitoba.....	Midsummer Fair	Winnipeg.....	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.....	Jan., 1913	Jersey City...	E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club....	Monthly.....	Jersey City ...	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n	July 11, 1912....	Newport News	Geo. C. Faville, Norfolk.
Washington State Col. V. M. A ..	1st & 3d Fri. Eve.	Pullman.....	R. J. Donohue, Pullman.
Washington State V. M. A.....	Jan. 9-10, 1913...	Wenatchee....	Carl Cozier, Bellingham
Western Penn. V. M. Ass'n.....	3d Thurs. ea. mo.	Pittsburgh....	Benjamin Gunner, Sewickley
Wisconsin Soc. Vet. Grad	July, 1912.....	Janesville.....	J. P. West, Madison.
York Co. (Pa.) V. M. A...	June 4, 1912.....	York.....	E. S. Bausticker, York, Pa.

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(Signed) ROBT. W. ELLIS,
Vice-President and Editor.

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